

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 g
 Edition : 01.09.88
 Replaces : 6.87
 Test oil : ISO-4113

Combination no. : 9 400 085 248

Injection pump
 Pump designation : PES6A95D412RS2709
 EP type number : 9 400 083 009
 Governor
 Governor design. : RQV350...1400AB1202-
 1L
 Governor no. : 9 420 080 220

Customer-spec. information
 Customer : FORD (FTO)

Engine : 6.6 1 NA

1st version kW : 108.0
 2nd version kW : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25
 : (3.10...3.30)

A01

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 7.9...8.0
 100 s: (7.7...8.2)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 7.0...11.0
 Del. quantity cm³/ : 0.7...1.1
 100 s: (0.5...1.3)

Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1420
 travel mm : 8.50...8.60
 2nd speed rpm : 350
 travel mm : 1.30...1.60
 3rd speed rpm : 700
 travel mm : 4.20...4.60
 4th speed rpm : 1100
 travel mm : 6.10...6.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1420
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400
Del. quantity : 79.0...80.0
1000 : (77.0...82.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 60...66

Testing:

1st rack travel in: 9.70
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1550...1580
4th rack travel in: 1720
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 460...530

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del. quantity cm³/ : 70.0...73.0
1000 s: (67.5...75.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 112.0...122.0
1000 s: (-)

A02

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.00...11.00
Del. quantity cm³/ : 7.0...11.0
1000 s: (5.0...13.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 f
Edition : 01.09.88
Replaces : 6.87
Test oil : ISO-4113

Combination no. : 9 400 085 258

Injection pump
Pump designation : PES6A95D410RS2714
EP type number : 9 400 084 001
Governor
Governor design. : RQV375...1300AB1208-
1L
Governor no. : 9 420 080 219

Customer-spec. information
Customer : FORD (FTO)

Engine : 6,6 TC

1st version kW : 123.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25
: (3.10...3.30)

A03

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.90
& maximum rack tra: 21.00
Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 6.7...6.9

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1345

travel mm : 8.50...8.60

2nd speed rpm : 350

travel mm : 1.30...1.60

3rd speed rpm : 700

travel mm : 4.10...4.50

4th speed rpm : 1100

travel mm : 6.30...6.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1345

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300
Aneroid pressure h: 600
Del.quantity : 86.0...88.0
1000 : (84.0...90.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 11.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 12...20

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 375
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION

Speed rpm : 460...530

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 12.10...12.20
2nd speed rpm : 600
Rack travel in m: 12.80...12.90
3rd speed rpm : 800
Rack travel in m: 12.60...12.80
4th speed rpm : 900
Rack travel in m: 12.40...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

A04

Rack travel in m: 10.60...10.70
2nd pressure hPa : 400
Rack travel in m: 12.20...12.30
3rd pressure hPa : 250
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 600
Del.quantity cm³/ : 83.0...86.0
1000 s: (80.5...88.5)
Aneroid pressure h: 600
Speed rpm : 800
Del.quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 57.0...59.0
1000 s: (55.0...61.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 115.0...125.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.70...6.90
Del.quantity cm³/ : 9.5...13.5
1000 s: (7.0...16.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 j
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 266
 Injection pump
 Pump designation : PES6A95D410RS2751
 EP type number : 9 400 084 013
 Governor
 Governor design. : RSV650...1250A8C2231
 L
 Govenner no. : 9 420 083 229

Customer-spec. information
 Customer : FORD (FNH)

Engine : 6,6 L NA

1st version kW : 101.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

A06

Prestroke mm : 3.15...3.25
 : (3.10...3.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 6.00...7.00

BASIC SETTING

1st speed rpm : 1220

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 9.5...9.7

100 s: (9.2...9.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 650.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1220

Del.quantity : 95.0...97.0

1000 : (92.5...99.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 47...55

Testing:

1st rack travel in: 9.80
Speed rpm : 1265...1270
2nd rack travel in: 4.00
Speed rpm : 1295...1300
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 650
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 690...750

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 81.0...85.0
1000 s: (79.0...87.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1265...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

APPLICATION
Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 j 1
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 267
 Injection pump
 Pump designation : PES6A95D410RS2751
 EP type number : 9 400 084 013
 Governor
 Governor design. : RSV650...1250A8C2231
 -1L
 Governor no. : 9 420 083 230

Customer-spec. information
 Customer : FORD (FNH)

Engine : 6,6 L TC

1st version kW : 112.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

A08

Prestroke mm : 3.15...3.25
 : (3.10...3.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 6.00...7.00

BASIC SETTING

1st speed rpm : 1220

Rack travel in mm : 10.40...10.50

Del. quantity cm³/ : 9.1...9.3

100 s: (8.8...9.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 650.0

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1220

Del. quantity : 91.0...93.0

1000 : (88.5...95.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 47...55

Testing:
1st rack travel in: 9.40
Speed rpm : 1265...1270
2nd rack travel in: 4.00
Speed rpm : 1295...1300
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 4.8

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 650
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 690...750

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm3/ : 77.0...81.0
1000 s: (75.0...83.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 1265...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

APPLICATION
Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,9 d
Edition : 01.09.88
Replaces : 8.1.88
Test oil : ISO-4113

Combination no. : 9 400 085 272

Injection pump
Pump designation : PES4A90D320RS2744
EP type number : 9 400 084 012
Governor
Governor design. : RSV350...1300A2B2215
-2R
Governor no. : 9 420 083 234

Customer-spec. information
Customer : MWM

Engine : TD 229-4

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 046

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
: (2.65...2.85)
Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.60...10.70

Del. quantity cm³/ : 8.9...9.0
100 s: (8.7...9.2)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 350.0
Rack travel in mm : 4.9...5.1
Del. quantity cm³/ : 1.1...1.5
100 s: (0.9...1.7)
Spread cm³ : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300
Del. quantity : 89.0...90.0
1000 : (87.0...92.0)
Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 9.60

Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1410...1440
4th rack travel in: 1600
Speed rpm : 0.30...1.70

LOW IDLE 1

Control Lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 10.60...10.70
2nd speed rpm : 500
Rack travel in m: 11.20...11.30
3rd speed rpm : 800
Rack travel in m: 10.90...11.20
4th speed rpm : 900
Rack travel in m: 10.80...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 87.0...89.0
1000 s: (84.5...91.5)
Speed rpm : 900
Del.quantity cm3/ : 89.0...91.0
1000 s: (86.5...93.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 k
 Edition : 01.09.88
 Replaces : 8.1.88
 Test oil : ISO-4113
 Combination no. : 9 400 085 292
 Injection pump
 Pump designation : PES6A95D410RS2742
 EP type number : 9 400 084 011
 Governor
 Governor design. : RQV350...1300AB1220-1L
 Governor no. : 9 420 080 239

Customer-spec. information
 Customer : FORD FNH

Engine : 6,6 L
 1st version kW : 123.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.00
 Test nozzle holder
 assembly : 1 688 901 017
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25
 : (3.10...3.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1300
 Rack travel in mm : 12.80...12.90
 Del.quantity cm³/ : 9.4...9.6
 100 s: (9.1...9.8)
 Spread cm³ : 0.3
 100 s: (0.6)
 2nd speed rpm : 350.0
 Rack travel in mm : 7.4...7.6
 Del.quantity cm³/ : 2.2...2.6
 100 s: (1.9...2.8)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 8.50...8.60
 2nd speed rpm : 350
 travel mm : 1.10...1.80
 3rd speed rpm : 500
 travel mm : 2.70...3.10
 4th speed rpm : 700
 travel mm : 3.50...3.90
 5th speed rpm : 1000
 travel mm : 4.90...5.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1540

Rack travel in mm : 8.00...0.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300
Aneroid pressure h: 600
Del.quantity : 94.0...96.0
1000 : (91.5...98.5)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 111...119

Testing:

1st rack travel in: 11.80
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1480...1510
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 350
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 600
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...10.90
2nd pressure hPa : 300
Rack travel in m: 11.10...11.30
3rd pressure hPa : 400
Rack travel in m: 12.30...12.40

START CUT-OUT

A13

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 800
Del.quantity cm³/ : 83.5...87.5
1000 s: (81.5...89.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 58.5...60.5
1000 s: (56.0...63.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 155.0...165.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.40...7.60
Del.quantity cm³/ : 22.0...26.0
1000 s: (19.5...28.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 8
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 085 295
Injection pump
Pump designation : PES4A90D410RS2666
EP type number : 0 410 894 029
Governor
Governor design. : RQV300...1400AB1065-
5L
Governor no. : 0 420 212 169

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
(2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del. quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 63.0...64.0

1000 : (61.0...66.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version
Control Lever
position degrees: 59...67

Testing:
1st rack travel in: 9.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1630
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 20...28

Testing:
Speed rpm : 100
Minimum rack travel: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80
Rack travel in mm : 2.00

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 630
Rack travel in m: 12.20...12.30
3rd speed rpm : 900
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 630
Del.quantity cm³/ : 55.5...58.5
1000 s: (53.0...61.0)
Speed rpm : 900
Del.quantity cm³/ : 54.5...57.5
1000 s: (52.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 L
 Edition : 01.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 297
 Injection pump
 Pump designation : PES6A95D41ORS2758-1
 EP type number : 9 400 084 015
 Governor
 Governor design. : RQV350...1200AB1220-
 2L
 Governor no. : 9 420 080 252

Customer-spec. information
 Customer : FORD FNH

Engine : 6,6 L TC

1st version kW : 138.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.00...14.10

Del. quantity cm³/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del. quantity cm³/ : 2.0...2.4

100 s: (1.8...2.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

travel mm : 7.70...7.90

2nd speed rpm : 700

travel mm : 4.10...4.50

3rd speed rpm : 500

travel mm : 3.10...3.50

4th speed rpm : 350

travel mm : 1.70...2.10

5th speed rpm : 270

travel mm : 0.80...1.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 8.00...0.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700
Del.quantity : 108.0...110.0
1000 : (106.0...112.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:

1st rack travel in: 13.00
Speed rpm : 1245...1255
2nd rack travel in: 4.00
Speed rpm : 1380...1410
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 12...20

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 350
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

Speed rpm : 360...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : —
Rack travel in m: 9.90...10.00
2nd pressure hPa : 355
Rack travel in m: 11.30...11.40
3rd pressure hPa : 490
Rack travel in m: 12.90...13.30

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm³/ : 102.0...106.0
1000 s: (100.0...108.0)
Aneroid pressure h: —
Speed rpm : 500
Del.quantity cm³/ : 53.0...55.0
1000 s: (51.0...57.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.90...7.10
Del.quantity cm³/ : 20.0...24.0
1000 s: (18.0...26.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 6,6 L 1
Edition : 01.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 085 298
Injection pump
Pump designation : PES6A95D410RS2758
EP type number : 9 400 084 016
Governor
Governor design. : RQV350...1300AB1220-
3L
Governor no. : 9 420 080 253

Customer-spec. information
Customer : FORD FNH

Engine : 6,6 L

1st version kW : 123.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25
: (3.10...3.30)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.2...7.4

Del.quantity cm³/ : 2.0...2.4
100 s: (1.7...2.6)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1385
travel mm : 8.50...8.60

2nd speed rpm : 300
travel mm : 1.10...1.50

3rd speed rpm : 500
travel mm : 3.20...3.60

4th speed rpm : 700
travel mm : 4.00...4.40

5th speed rpm : 1000
travel mm : 5.50...5.90

GUIDE SLEEVE POSITION

Control-Lever position
Degree: -1

Speed rpm : 1530

Rack travel in mm : 8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1300

Aneroid pressure h: 900
Del.quantity : 98.0...100.0
1000 : (96.0...102.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:

1st rack travel in: 12.20
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1500...1530
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...75

Testing:

Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 350
Rack travel in mm : 7.20...7.40

CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 353
Rack travel in m: 11.20...11.30
3rd pressure hPa : 473
Rack travel in m: 12.40...12.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 55.0...57.0
1000 s: (53.0...59.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.20...7.40
Del.quantity cm³/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 2
Edition : 19.9.88
Replaces : 10.85
Test oil : ISO-4113

Combination no. : 9 400 230 014

Injection pump
Pump designation : PES6A95D410RS2522
Governor
Governor design. : RSV400...1100A2B2055
DL

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1.85...1.95
 : (1.80...2.00)
Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50(0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 10.0...10.2
100 s : (9.8...10.4)

Spread cm³ : 0.3
100 s : (-)

2nd speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 1.2...1.6

100 s : (-)
Spread cm³ : 0.3
100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h : 800
Del.quantity : 100.5...102.5
1000 : (98.5...104.5)
Spread cm³ : 3.0
1000 : (6.0)

RATED SPEED

1st version
Control lever
position degrees: 39...47

Testing:
1st rack travel in: 9.50
Speed rpm : 1150
2nd rack travel in: 5.20
Speed rpm : 1200
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.50

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 650...680

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.50...10.60
2nd speed rpm : 650
Rack travel in m: 11.70...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 550
Pressure hPa : 240
Rack travel mm : 11.30...11.40

Measurement
Speed 1/min : 550

1st pressure hPa : 110
Rack travel in m: 10.40...10.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 650
Del.quantity cm3/ : 112.5...115.5
1000 s: (110.5...117.5)
Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 86.0...92.0
1000 s: (84.0...94.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1150

STARTING FUEL DELIVERY

A21

Speed rpm : 100
Del.quantity cm3/ : 165.0...185.0
1000 s: (-)
Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version
Speed rpm : 1200
Del.quantity cm3/ : 19.6...29.6
1000 s: (-)

LOW IDLE

Speed rpm : 400
Del.quantity cm3/ : 12.0...16.0
1000 s: (10.0...18.0)

Remarks:
Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

APPLICATION
Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b
Edition : 01.09.88
Replaces : 9.86
Test oil : ISO-4113
Combination no. : 9 400 230 103
Injection pump
Pump designation : PES6A100D320/3RS2691
-2
EP type number : 9 410 230 028
Governor
Governor design. : RQV35D...1100AB1227R
Governor no. : 9 420 231 015

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

1st version kW : 156.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 13.0...13.2

100 s: (12.8...13.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 5.6...5.8
Del. quantity cm³/ : 1.8...2.2
100 s: (1.5...2.4)
Spread cm³ : 0.3
100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1160
travel mm : 8.10...8.20
2nd speed rpm : 350
travel mm : 0.90...1.30
3rd speed rpm : 500
travel mm : 3.30...3.60
4th speed rpm : 800
travel mm : 5.00...5.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1290
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 670

Del.quantity : 130.5...132.5
1000 : (128.5...134.5)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 58...63

Testing:

1st rack travel in: 11.80
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17
Speed rpm : 350
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 485...545

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 670
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.15...10.35
2nd pressure hPa : 535
Rack travel in m: 12.10...12.20
3rd pressure hPa : 387
Rack travel in m: 10.65...11.05

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 670
Speed rpm : 750
Del.quantity cm³/ : 128.5...132.5
1000 s: (126.0...134.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 79.0...83.0
1000 s: (77.0...85.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...0.0
1000 s: (160.0...0.0)
Rack travel in mm : 15.40...15.60

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Set shutoff solenoid 0.5...1.5 mm
before shutoff.

Start-of-delivery mark is at 7° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 g 3
 Edition : 14.6.88
 Replaces : 7.86
 Test oil : ISO-4113

Combination no. : 9 400 231 084

Injection pump
 Pump designation : PES6P110A720RS3083-1
 Governor
 Governor design. : RSV425...1100P2A489

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 456 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172.0...175.0

Test lines : 9 681 271 022

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 3.45...3.55
 : (3.40....3.60)
 Rack travel in mm : 10.50
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

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Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 13.80...14.00

Spread cm3 : 0.40

2nd speed rpm : 425
 Rack travel in mm : 6.40...6.60
 Del.quantity cm3/ : 1.10...1.60
 Spread cm3 : 0.45

GUIDE SLEEVE POSITION

Control-lever position
 Degree: LOSE
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del.quantity : 137.50...139.50
 1000 : (134.5...142.5)

RATED SPEED

1st version
 Control lever
 position degrees: 46...54

Testing:
 1st rack travel in: 11.00
 Speed rpm : 1155...1165
 2nd rack travel in: 4.00
 Speed rpm : 1230...1260
 4th rack travel in: 1350
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
 position degrees: 21...29
 Setting point w/out bumper spring
 Speed rpm : 425
 Rack travel in mm : 5.90....6.10

Testing:
 Speed rpm : 100
 Minimum rack trave: 19.00
 Speed rpm : 425
 Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00
Speed rpm : 655...715

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.10...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 370
Rack travel mm : 12.45...12.55

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11.40...11.80
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 155.50...159.50
1000 s: (152.5...162.5)
Speed rpm : 500
Del.quantity cm³/ : 105.00...109.00
1000 s: (102.0...112.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 g 4
 Edition : 17.10.88
 Replaces : 5.3.87
 Test oil : ISO-4113
 Combination no. : 9 400 231 196
 Injection pump
 Pump designation : PES6P110A720RS3083
 EP type number : 9 410 231 009
 Governor
 Governor design. : RSV400...1050P2A488
 -3
 Governor no. : 9 420 234 130

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466 AF

1st version kW : 167.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
 : (3.40...3.60)

Rack travel in mm : 10.50
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 14.9...15.1

100 s: (14.7...15.4)

Spread cm³ : 0.4

100 s: (0.75)

2nd speed rpm : 400

Rack travel in mm : 6.60...6.80

Del. quantity cm³/ : 1.3...1.8

100 s: (1.1...2.1)

Spread cm³ : 0.45

100 s: (0.75)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 149.5...151.5

1000 : (147.0...154.0)

Spread cm³ : 4.0

1000 : (7.5)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.60

Speed rpm : 1095...1105

2nd rack travel in: 4.00

Speed rpm : 1190...1200

3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.20

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 660...720

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.60...12.70
2nd speed rpm : 700
Rack travel in m: 13.80...14.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.80...14.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 665
Rack travel in m: 12.90...13.00
3rd pressure hPa : 415
Rack travel in m: 11.20...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm³/ : 180.0...185.0
1000 s: (177.5...187.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 91.0...95.0
1000 s: (88.0...98.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 156.0...176.0
1000 s: (152.0...180.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.60...6.80
Del.quantity cm³/ : 13.5...18.5
1000 s: (11.0...21.0)
Spread cm³ : 4.5
1000 s: (7.5)

Remarks:

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 12,75° after
start of delivery cyl. 1. rque-control
Starting/full-load transition speed
from holding magnet = 400 1/min.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 2,5 C
Edition : 07.11.88
replaces : 16.07.87
Calibrating oil : ISO 4113

Injection pump : VE 3/10F1090 R276-2
Type number : 0 460 403 012
Customer Part-No. :

Customer-specific information
Customer : CASE

Engine : D 179/633/485

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery block
Piston stroke mm: 1,0
mm: 0,98...1,02

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 4,8...5,2

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm³/
1000H.: 73,3...74,3
Dispersion cm³/: 2,5
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm³/
1000H.: 18,0...22,0
Dispersion cm³/: 2,5
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1145
Del.quantity cm³/
1000H.: 45,0...51,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 75,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,4...3,2
mm: (2,1...3,5)
2nd speed 1/min: 800
TD travel mm: 4,8...5,2
mm: (4,3...5,7)
3rd speed 1/min: 1500
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 800
Supply-pump
pressure bar: 4,2...4,8
3rd speed 1/min: 1050
Supply-pump
pressure bar: 5,1...5,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1225
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 1175
Del.quantity cm³/: 10,0...40,0
1000H.: -
4th speed 1/min: 1145
Del.quantity cm³/: 45,0...51,0
1000H.: (43,5...52,5)
5th speed 1/min: 1050
Del.quantity cm³/: 76,5...79,5
1000H.: (75,5...80,5)
6th speed 1/min: 800
Del.quantity cm³/: 73,3...74,3
1000H.: (71,5...76,1)
7th speed 1/min: 500
Del.quantity cm³/: 70,5...74,5
1000H.: (69,5...75,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050
Del.quantity cm³/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 400
Del.quantity cm³/: 18,0...22,
1000H.: 16,0...24,0)
2nd speed 1/min: 550
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm³/: -
ind. 1000H: 80,0
2nd speed 1/min: 450
Del.quantity cm³/: -
max. 1000H : 80,0

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,1...5,5
MS	mm	: 1,6...2,0
SVS max.	mm	: 2,4
XK	mm	: 20,2...22,2
XL	mm	: 9,3...12,7

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 3,91
Edition : 07.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/10F1250 R302
Type number : 0 460 404 054

Customer-specific information
Customer : CASE

Engine : DT 239

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,2
(from BDC): +0,02(0,04)

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 4,8...5,2

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 5,5...6,1

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm³/
1000H.: 80,5...81,5
Dispersion cm³/: 3,0
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 370
Del.quantity cm³/
1000H.: 16,5...20,5
Dispersion cm³/: 3,0
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1330
Del.quantity cm³/
1000H: 49,0...55,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 90,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,4...3,2
mm: (1,5...2,9)
2nd speed 1/min: 800
TD travel mm: 4,8...5,2
mm: (3,9...5,3)
3rd speed 1/min: 1200
TD travel mm: 6,8...7,6
mm: (6,3...7,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4,2...4,8
2nd speed 1/min: 800
Supply-pump
pressure bar: 5,5...6,1
3rd speed 1/min: 1200
Supply-pump
pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1250
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1470
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1420
Del.quantity cm³/: 0,0...10,0
1000H.: (0,0...10,0)
3rd speed 1/min: 1370
Del.quantity cm³/: 10,0...50,0
1000H.: (10,0...50,0)
4th speed 1/min: 1330
Del.quantity cm³/: 49,0...55,0
1000H.: (47,5...56,5)
5th speed 1/min: 1250
Del.quantity cm³/: 79,9...82,9
1000H.: (78,9...83,9)
6th speed 1/min: 800
Del.quantity cm³/: 80,5...81,5
1000H.: (78,7...83,3)
7th speed 1/min: 500
Del.quantity cm³/: 77,5...81,5
1000H.: (76,5...82,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 370
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 370
Del.quantity cm³/: 16,5..20,5
1000H.: (14,5..22,5)
2nd speed 1/min: 500
Del.quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm³/: -
ind. 1000H: 90,0

2nd speed 1/min: 450
Del.quantity cm³/: -
max. 1000H : 90,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,5
MS mm : 1,2...1,6
SVS max. mm : 3,3
XK mm : 20,2...22,2
XL mm : 13,7...17,1

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3M5
Edition : 01.08.88
replaces : 18.07.88
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2100 L297
Type number : 0 460 404 055

Customer-specific information
Customer : OPEL

Engine : 2,3 YDR

Power k: 74

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,1...5,5

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 62,5...63,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del. quantity cm³/
1000H.: 38,0...39,0

Low-idle speed regulation:

Speed 1/min: 290
Del. quantity cm³/
1000H.: 13,5...17,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2500
Charge press. hPa: 1000
Del. quantity cm³/
1000H: 15,0...21,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 53,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 2,7...4,3
mm: (2,3...4,7)

KSB solenoid-operated
valve volt: -

2nd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3,8...6,2
mm: (3,2...6,8)

KSB solenoid-operated
valve volt: -

3rd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 0,0...6,2
mm: (0,0...6,2)

KSB solenoid-operated
valve volt: -

4th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)

KSB solenoid-operated
valve volt: 12,0

5th speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,7...4,3
mm: (3,3...4,7)

KSB solenoid-operated
valve volt: 12,0

6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5,1...5,5
mm: (4,6...6,0)

KSB solenoid-operated
valve volt: 12,0

1st speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
Supply-pump pressure bar: 4,2...4,8

KSB solenoid-operated
valve volt: -

2nd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump pressure bar: 4,4...5,0

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 1500

Charge press. hPa: 1000
Supply-pump pressure bar: 5,1...5,8

KSB solenoid-operated
valve volt: 12,0

4th speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)

2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 500
LDA stroke mm: 6,5
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³: 55,5...56,5
1000H.: (53,0...59,0)

2nd speed 1/min: 2700
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³: 0,0...6,0
1000H.: (0,0...6,0)

3rd speed 1/min: 2500
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³: 15,0...21,0
1000H.: (14,0...22,0)

4th speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³: 52,3...54,7
1000H.: (51,2...55,8)

5th speed 1/min: 1200
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 62,5...63,5
1000H.: (60,7...65,3)
6th speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 59,5...62,5
1000H.: -
7th speed 1/min: 800
Charge press. hPa: 500
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 55,5...56,5
1000H.: (53,0...59,0)
8th speed 1/min: 800
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 38,5...41,5
1000H.: -
9th speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 38,0...39,0
1000H.: (36,2...40,8)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 290
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 290
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 13,5...17,5
1000H.: (11,5...19,5)
2nd speed 1/min: 320
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 7,0...13,0
1000H.: (6,5...13,5)
3rd speed 1/min: 380
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 0,0...2,6
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 250
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: -
ind. 1000H.: 55,0

2nd speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: -
max. 1000H.: 53,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 0,8...1,2

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3M6
Edition : 01.08.88
replaces : 18.07.88
Calibrating oil : ISO 4113
Injection pump : VE 4/10F2100 L297-1
Type number : 0 460 404 056

Customer-specific information
Customer : OPEL

Engine : 2,3 YDT

Power k: 74

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,1...5,5

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 62,5...63,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 38,0...39,0
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 290
Del.quantity cm³/
1000H.: 13,5...17,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2500
Charge press. hPa: 1000
Del.quantity cm³/
1000H: 15,0...21,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 53,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 2,7...4,3
mm: (2,3...4,7)

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3,8...6,2
mm: (3,2...6,8)

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 0,0...6,2
mm: (0,0...6,2)

KSB solenoid-operated
valve volt: -
4th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,7...4,3
mm: (3,3...4,7)

KSB solenoid-operated
valve volt: 12,0
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5,1...5,5
mm: (4,6...6,0)

KSB solenoid-operated
valve volt: 12,0

1st speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

Supply-pump pressure characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
Supply-pump pressure bar: 4,2...4,8
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1200
Charge press. hPa: 1000

Supply-pump pressure bar: 4,4...5,0
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump pressure bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 500
LDA stroke mm: 6,2
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 55,5...56,5
1000H.: (53,0...59,0)
2nd speed 1/min: 2700
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...6,0
1000H.: (0,0...6,0)
3rd speed 1/min: 2500
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 15,0...21,0
1000H.: (14,0...22,0)
4th speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 52,3...54,7
1000H.: (51,2...55,8)

5th speed 1/min: 1200
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 62,5...63,5
1000H.: (61,7...65,3)

6th speed 1/min: 800
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 59,5...62,5
1000H.: -

7th speed 1/min: 800
Charge press. hPa: 500
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 55,5...56,5
1000H.: (53,0...59,0)

8th speed 1/min: 800
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 38,5...41,5
1000H.: -

9th speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 38,0...39,0
1000H.: (36,2...40,8)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 290
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 290
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 13,5...17,5
1000H.: (11,5...19,5)

2nd speed 1/min: 320
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 7,0...13,0
1000H.: (6,5...13,5)

3rd speed 1/min: 380
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 0,0...2,6
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 250

KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: -
ind. 1000H.: 55,0

2nd speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: -
max. 1000H.: 55,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 0,8...1,2

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3M7
Edition : 01.08.88
replaces : 18.07.88
Calibrating oil : ISO 4113
Injection pump : VE 4/10F2100 L297-2
Type number : 0 460 404 057

Customer-specific information
Customer : OPEL

Engine : 2,3 YDT

Power k: 74

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,1...5,5

B10

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 62,5...63,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 38,0...39,0
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 290
Del.quantity cm3/
1000H.: 13,5...17,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2525
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 15,0...21,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 53,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 2,7...4,3
mm: (2,3...4,7)

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3,8...6,2
mm: (3,2...6,8)

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 0,0...6,2
mm: (0,0...6,2)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,7...4,3
mm: (3,3...4,7)

KSB solenoid-operated
valve volt: 12,0
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5,1...5,5
mm: (4,6...6,0)

KSB solenoid-operated
valve volt: 12,0

1st speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
Supply-pump pressure bar: 4,2...4,8
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1200

Charge press. hPa: 1000
Supply-pump pressure bar: 4,4...5,0

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 1500
Charge press. hPa: 1000

Supply-pump pressure bar: 5,1...5,7

KSB solenoid-operated
valve volt: 12,0

4th speed 1/min: 2100
Charge press. hPa: 1000

Supply-pump pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -

KSB solenoid-operated
valve volt: 12,0

Overflow quantity cm³/10s: 41...83
: (26...98)

2nd speed 1/min: 2100
Charge press. hPa: 1000

KSB solenoid-operated
valve volt: 12,0

Overflow quantity cm³/10s: 55...138
: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting point hPa: 500

LDA stroke mm: 6,2

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³: 55,5...56,5
1000H.: (53,0...59,0)

2nd speed 1/min: 2700
Charge press. hPa: 1000

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³: 0,0...6,0
1000H.: (0,0...6,0)

3rd speed 1/min: 2100
Charge press. hPa: 1000

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³: 52,3...54,7
1000H.: (51,2...55,8)

4th speed 1/min: 1200
Charge press. hPa: 1000

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³: 62,5...63,5
1000H.: (60,7...65,3)

5th speed 1/min: 800

Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 59,5...62,5
1000H.: -
6th speed 1/min: 800
Charge press. hPa: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 55,5...56,5
1000H.: (53,0...59,0)
7th speed 1/min: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 38,5...41,5
1000H.: -
8th speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 38,0...39,0
1000H.: (36,2...40,8)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 290
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 290
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 13,5...17,5
1000H.: (11,5...19,5)
2nd speed 1/min: 320
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 7,0...13,0
1000H.: (6,5...13,5)
3rd speed 1/min: 380
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...2,6
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 250
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H.: 55,0

2nd speed 1/min: 400

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H.: 53,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 0,8...1,2

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 2,2 I
Edition : 27.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2100 L319
Type number : 0 460 404 058

Customer-specific information
Customer : VM

Engine : HR 492 H 53

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 5,0...5,4

Supply-pump pressure:

Speed 1/min: 1500

Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del.quantity cm³/
1000H.: 38,5...39,5
Dispersion cm³/: 3,0
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm³/
1000H.: 18,0...22,0
Dispersion cm³/: 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2300
Del.quantity cm³/
1000H.: 19,0...25,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 53,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,7...1,5
mm: (0,4...1,8)
2nd speed 1/min: 1500
TD travel mm: 5,0...5,4
mm: (4,5...5,9)
3rd speed 1/min: 2100
TD travel mm: 7,6...8,4
mm: (7,3...8,7)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 2,2...2,8
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5,3...5,9
3rd speed 1/min: 2100

Supply-pump pressure bar: 7,2...7,8

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2400
Del.quantity cm³/: 1,0...9,0
1000H.: (0,5...9,5)
2nd speed 1/min: 2300
Del.quantity cm³/: 19,0...25,0
1000H.: (18,0...24,0)
3rd speed 1/min: 2200
Del.quantity cm³/: 27,0...35,0
1000H.: -
4th speed 1/min: 2100
Del.quantity cm³/: 31,0...34,0
1000H.: (29,5...35,5)
5th speed 1/min: 1500
Del.quantity cm³/: 38,5...39,5
1000H.: (37,0...41,0)
6th speed 1/min: 1000
Del.quantity cm³/: 43,2...45,8
1000H.: -
7th speed 1/min: 600
Del.quantity cm³/: 40,5...43,5
1000H.: (39,0...45,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
Del.quantity cm³/: 18,0...22,0
1000H.: (15,0...25,0)
2nd speed 1/min: 480
Del.quantity cm³/: 2,0...8,0
1000H.: (0,0...10,0)
3rd speed 1/min: 550
Del.quantity cm³/: 0,0...2,0
1000H.: (0,0...2,0)

Automatic starting fuel delivery:

1st speed 1/min: 400
Del.quantity cm³/: -
ind. 1000H.: 58,0

2nd speed 1/min: 500
Del.quantity cm³/: -
max. 1000H.: 65,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 0,6...1,0
SVS max. mm : 3,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5P
Edition : 27.07.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/10F2050 R318
Type number : 0 460 404 059

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8144.97.2200

Power k: 83

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): ±0,02(0,04)

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 600
Charge press. hPa: 800
Setting value mm: 1,3...1,7

Supply-pump pressure:

Speed 1/min: 600
Charge press. hPa: 800
Setting value bar: 3,4...4,0

Full-load del. with charge press.:

Speed 1/min: 1200
Charge press. hPa: 800
Del. quantity cm³/
1000H.: 69,0...70,0
Dispersion cm³ / : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del. quantity cm³/
1000H.: 45,5...46,5

Low-idle speed regulation:

Speed 1/min: 400
Del. quantity cm³/
1000H.: 16,0...20,0

Full-load speed regulation:

Speed 1/min: 2400
Charge press. hPa: 800
Del. quantity cm³/
1000H: 30,0...36,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 55,0

Load-dependent start of delivery:

Speed 1/min: 600

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
Charge press. hPa: 800
TD travel mm: 1,3...1,7
mm: (1,0...2,0)

2nd speed 1/min: 1200
Charge press. hPa: 800
TD travel mm: 4,6...5,4
mm: (4,3...5,7)

3rd speed 1/min: 2000
Charge press. hPa: 800

TD travel mm: 8,4...9,2
mm: (8,1...9,5)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 800
Supply-pump pressure bar: 3,4...4,0
2nd speed 1/min: 1200
Charge press. hPa: 800
Supply-pump pressure bar: 5,2...5,8
3rd speed 1/min: 2000
Charge press. hPa: 800
Supply-pump pressure bar: 7,2...7,8

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow quantity cm³/10s: 41...83
2nd speed 1/min: 2100
Charge press. hPa: 800
Overflow quantity cm³/10s: 55...138
3rd speed 1/min: 2400
Charge press. hPa: 800
Overflow quantity cm³/10s: (26...98)
4th speed 1/min: 2100
Charge press. hPa: 800
Overflow quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting point hPa: 320
Del. quantity cm³/: 59,5...60,5
1000H.: (57,5...62,5)
2nd speed 1/min: 2500
Charge press. hPa: 800
Del. quantity cm³/: 13,5...22,5
1000H.: -
3rd speed 1/min: 2400
Charge press. hPa: 800
Del. quantity cm³/: 30,0...36,0
1000H.: (29,0...37,0)
4th speed 1/min: 2100
Charge press. hPa: 800
Del. quantity cm³/: 59,5...62,5
1000H.: (28,8...63,2)
5th speed 1/min: 1600
Charge press. hPa: 800
Del. quantity cm³/: 65,5...68,5
1000H.: -
6th speed 1/min: 1200
Charge press. hPa: 800
Del. quantity cm³/: 69,0...70,0
1000H.: (57,5...61,5)
7th speed 1/min: 800
Charge press. hPa: 800
Del. quantity cm³/: 64,3...67,3
1000H.: -
8th speed 1/min: 800

Charge press. hPa: 320
Del. quantity cm³/: 59,5...60,5
1000H.: (57,5...62,5)
9th speed 1/min: 600
Del. quantity cm³/: 45,5...46,5
1000H.: (43,5...48,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
Del. quantity cm³/: 16,0...20,0
1000H.: (14,0...22,0)
2nd speed 1/min: 450
Del. quantity cm³/: 8,0...13,0
1000H.: -
3rd speed 1/min: 500
Del. quantity cm³/: 5,5...10,5
1000H.: -
4th speed 1/min: 700
Del. quantity cm³/: 2,0...5,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 450
Del. quantity cm³/: -
ind. 1000H: 38,0
2nd speed 1/min: 500
Del. quantity cm³/: -
max. 1000H : 46,5

Shutoff electromagnet:

Cut-in min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,6...6,0
MS mm : 1,6...2,0
XK mm : 20,0...22,0
XL mm : 11,8...15,2

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 5,9E
Edition : 01.08.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/10F1150 R287
Type number : 0 460 406 056
Customer Part-No. : 1329 155 C1

Customer-specific information
Customer : CDC

Engine : D 358/956

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 5,4...5,8

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm3/
1000H.: 71,0...72,0
Dispersion cm3/: 3,0
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm3/
1000H.: 18,0...22,0
Dispersion cm3/: 3,0
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1160
Del.quantity cm3/
1000H: 46,0...52,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,4...3,2
mm: (2,1...3,5)
2nd speed 1/min: 800
TD travel mm: 5,4...5,8
mm: (4,9...6,3)
3rd speed 1/min: 1000
TD travel mm: 6,7...7,5
mm: (6,4...7,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4,0...4,6
2nd speed 1/min: 800
Supply-pump
pressure bar: 5,3...5,9
3rd speed 1/min: 1000

Supply-pump
pressure bar: 6,1...6,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1260
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 1210
Del.quantity cm³/: 0,0...10,0
1000H.: -
4th speed 1/min: 1160
Del.quantity cm³/: 46,0...52,0
1000H.: (44,5...53,5)
5th speed 1/min: 1050
Del.quantity cm³/: 73,5...76,5
1000H.: (72,4...77,6)
6th speed 1/min: 800
Del.quantity cm³/: 71,0...72,0
1000H.: (68,9...74,1)
7th speed 1/min: 500
Del.quantity cm³/: 68,5...72,5
1000H.: (67,1...73,9)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1050
Del.quantity cm³/: -
1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 18,0...22,0
1000H.: (15,5...24,5)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm³/: -
ind. 1000H.: 80,0

2nd speed 1/min: 450

Del.quantity cm³/: -
max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 1,3...1,7
SVS max. mm : 1,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 5,9D
Edition : 07.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/10F1500 R306
Type number : 0 460 406 057

Customer-specific information
Customer : CASE

Engine : D358

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 5,0...5,4

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm³/
1000H.: 75,5...76,5
Dispersion cm³/: 3,0
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 275
Del.quantity cm³/
1000H.: 15,0...19,0
Dispersion cm³/: 3,0
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1550
Del.quantity cm³/
1000H: 53,5...59,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,0...2,8
mm: (2,0...3,4)
2nd speed 1/min: 900
TD travel mm: 5,0...5,4
mm: (4,3...5,7)
3rd speed 1/min: 1200
TD travel mm: 6,6...7,4
mm: (5,9...7,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,6...4,2
2nd speed 1/min: 900
Supply-pump
pressure bar: 5,3...5,9
3rd speed 1/min: 1200
Supply-pump
pressure bar: 6,4...7,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1480
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1700
Del.quantity cm3/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1660
Del.quantity cm3/: 0,0...10,0
1000H.: (0,0...10,0)
3rd speed 1/min: 1610
Del.quantity cm3/: 10,0...50,0
1000H.: (10,0...50,0)
4th speed 1/min: 1550
Del.quantity cm3/: 53,5...59,5
1000H.: (52,0...61,0)
5th speed 1/min: 1480
Del.quantity cm3/: 75,0...78,0
1000H.: (73,5...79,5)
6th speed 1/min: 900
Del.quantity cm3/: 75,5...76,5
1000H.: (73,7...78,3)
7th speed 1/min: 500
Del.quantity cm3/: 68,0...72,0
1000H.: (67,0...73,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1480
Del.quantity cm3/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 275
Del.quantity cm3/: 15,0..19,0
1000H.: (13,0..21,0)
2nd speed 1/min: 400
Del.quantity cm3/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm3/: -
ind. 1000H: 80,0

2nd speed 1/min: 450
Del.quantity cm3/: -
max. 1000H : 80,0

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,3...1,7
SVS max.	mm	: 3,1
XK	mm	: 20,2...22,2
XL	mm	: 15,8...19,2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,4 S5
Edition : 07.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/10F2150 L324
Type number : 0 460 406 061

Customer-specific information
Customer : VW

Engine : 087T-LT(SG)2

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 2,2...2,6

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value bar: 6,0...6,6

Full-load del. with charge press.:

Speed 1/min: 1850
Charge press. hPa: 750
Del. quantity cm³/
1000H.: 34,0...35,0
Dispersion cm³ : 2,5
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del. quantity cm³/
1000H.: 24,5...25,5

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm³/
1000H.: 6,0...10,0

Full-load speed regulation:

Speed 1/min: 2400
Charge press. hPa: 750
Del. quantity cm³/
1000H: 13,0...17,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1250
Charge press. hPa: 750
TD travel mm: 0,5...1,3
mm: (0,2...1,6)

2nd speed 1/min: 1500
Charge press. hPa: 750
TD travel mm: 2,2...2,6
mm: (1,7...3,1)

3rd speed 1/min: 1850
Charge press. hPa: 750
TD travel mm: 3,7...4,5
mm: (3,4...4,8)

4th speed 1/min: 2150
Charge press. hPa: 750
TD travel mm: 3,7...4,5
mm: (3,4...4,8)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump pressure bar: 3,6...4,2
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump pressure bar: 6,0...6,6
3rd speed 1/min: 2150
Charge press. hPa: 750
Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 2150
Charge press. hPa: 750
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
Charge-air pressure-setting point hPa: 300
Del.quantity cm³/: 31,0...32,0
1000H.: (28,5...34,5)
2nd speed 1/min: 2575
Charge press. hPa: 750
Del.quantity cm³/: 0,0...6,0
1000H.: (0,0...6,0)
3rd speed 1/min: 2400
Charge press. hPa: 750
Del.quantity cm³/: 13,0...17,0
1000H.: (11,0...19,0)
4th speed 1/min: 2350
Charge press. hPa: 750
Del.quantity cm³/: 15,5...25,5
1000H.: (14,5...26,5)
5th speed 1/min: 2150
Charge press. hPa: 750
Del.quantity cm³/: 30,0...32,0
1000H.: (28,8...33,2)
6th speed 1/min: 1850
Charge press. hPa: 750
Del.quantity cm³/: 34,0...35,0
1000H.: (32,3...36,7)
7th speed 1/min: 1250
Charge press. hPa: 750

Del.quantity cm³/: 38,0...42,0
1000H.: (36,5...43,5)
8th speed 1/min: 750
Charge press. hPa: 300
Del.quantity cm³/: 31,0...32,0
1000H.: (28,5...34,5)
9th speed 1/min: 600
Charge press. hPa: 750
Del.quantity cm³/: 34,5...38,5
1000H.: (33,0...40,0)
10th speed 1/min: 600
Charge press. hPa: -
Del.quantity cm³/: 24,5...25,5
1000H.: (22,0...28,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 500
Del.quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 250
Del.quantity cm³/: -
ind. 1000H: 35,0
2nd speed 1/min: 450
Del.quantity cm³/: -
max. 1000H : 40,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 6,2...6,6
MS mm : 0,9...1,3

Remarks:
Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 1,6 B
Edition : 07.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 2/11F1200 R236-1
Type number : 0 460 412 002
Customer Part-No. :

Customer-specific information
Customer : STEYER

Engine : WD 208-41 TRAKTOR

Power k: 22

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): ±0,02(0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Setting value mm: 4,9...5,3

Supply-pump pressure:

Speed 1/min: 1000

B25

Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

Speed 1/min: 1000
Del.quantity cm³/
1000H.: 61,5...62,5
Dispersion cm³/
1000H.: 3,5

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm³/
1000H.: 7,0...11,0
Dispersion cm³/
1000H.: 3,5

Full-load speed regulation:

Speed 1/min: 1280
Del.quantity cm³/
1000H.: 29,0...35,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 65,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 1000
TD travel mm: 4,9...5,3
mm: (4,4...5,8)
3rd speed 1/min: 1200
TD travel mm: 6,6...7,4
mm: (6,3...7,7)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,3...3,9
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5,3...5,9
3rd speed 1/min: 1200
Supply-pump
pressure bar: 6,4...7,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1200
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1350
Del.quantity cm3/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1320
Del.quantity cm3/: 3,0...11,0
1000H.: -
3rd speed 1/min: 1280
Del.quantity cm3/: 29,0...35,0
1000H.: (28,0...36,0)
4th speed 1/min: 1200
Del.quantity cm3/: 59,0...62,0
1000H.: (58,2...62,8)
5th speed 1/min: 1000
Del.quantity cm3/: 61,5...62,5
1000H.: (59,7...64,3)
6th speed 1/min: 800
Del.quantity cm3/: 58,5...61,5
1000H.: -
7th speed 1/min: 500
Del.quantity cm3/: 50,5...53,5
1000H.: (49,5...54,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1200
Del.quantity cm3/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 300
Del.quantity cm3/: 7,0...11,0
1000H.: (5,0...13,0)
2nd speed 1/min: 350
Del.quantity cm3/: 0,0...2,6
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 170
Del.quantity cm3/: -
ind. 1000H: 70,0

2nd speed 1/min: 280
Del.quantity cm3/: -
max. 1000H : 47,5

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,3...5,7
MS	mm	: 0,8...1,2
XK	mm	: 17,0...19,0
XL	mm	: 12,0...15,4

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 5,0 D
Edition : 07.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2250 R274
Type number : 0 460 414 045
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : 500 SER 6 MAR TC4500

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.28
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 800
Setting value mm: 3,9...4,3

KSB solenoid-operated
valve volt: -

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 800
Setting value bar: 7,1...7,7
KSB solenoid-operated
valve volt: -

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 800
Del.quantity cm3/
1000H.: 66,1...67,1
KSB solenoid-operated
valve volt: -
Dispersion cm3/ : 4,0
1000H : (4,0)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 17,0...18,0
KSB solenoid-operated
valve volt: -
Dispersion cm3/ : 4,0
1000H.: (4,0)

Low-idle speed regulation:

Speed 1/min: 400
Charge press. hPa: -
Del.quantity cm3/
1000H.: 10,0...12,0
KSB solenoid-operated
valve volt: -
Dispersion cm3/ : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2500
Charge press. hPa: 800
Del.quantity cm3/
1000H.: 23,5...25,5
KSB solenoid-operated
valve volt: -

Start:

Speed 1/min: 100
Charge press. hPa: -
Del.quantity : -
mind cm3/1000H.: 62,0
KSB solenoid-operated
valve volt: -

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 800
TD travel mm: 1,0...3,0
mm: -
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 3,3...5,3
mm: -
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 0,9...1,7
mm: (0,6...2,0)
KSB solenoid-operated
valve volt: -
4th speed 1/min: 1500
Charge press. hPa: 800
TD travel mm: 3,9...4,3
mm: (3,4...4,8)
KSB solenoid-operated
valve volt: -
5th speed 1/min: 1800
Charge press. hPa: 800
TD travel mm: 4,9...5,7
mm: (4,6...6,0)
KSB solenoid-operated
valve volt: -

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
Supply-pump
pressure bar: 6,1...6,7
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1500
Charge press. hPa: 800
Supply-pump
pressure bar: 7,1...7,7
KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1800
Charge press. hPa: -
Supply-pump
pressure bar: 7,7...8,3
KSB solenoid-operated
valve volt: -

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
KSB solenoid-operated
valve volt: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2250
Charge press. hPa: 800
KSB solenoid-operated
valve volt: -
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500
Charge-air pressure-setting
point hPa: 300
LDA stroke mm: 6,7
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 34,5...35,5
1000H.: (32,0...38,0)
2nd speed 1/min: 2600
Charge press. hPa: 800
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 0,5...6,5
1000H.: (0,0...7,0)
3rd speed 1/min: 2500
Charge press. hPa: 800
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 23,5...25,5
1000H.: (20,5...28,5)
4th speed 1/min: 2250
Charge press. hPa: 800
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 68,5...72,5
1000H.: (67,5...73,5)
5th speed 1/min: 1500
Charge press. hPa: 800
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 66,1...67,1
1000H.: (63,6...69,6)
6th speed 1/min: 500
Charge press. hPa: 800
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 58,3...64,3
1000H.: -
7th speed 1/min: 500
Charge press. hPa: -
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 17,0...18,0
1000H.: (14,5...20,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2250
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: 12,0
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 10,0..12,0
1000H.: 7,0...15,0)
2nd speed 1/min: 500
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 2,0...8,0
1000H.: (1,5...8,5)

Automatic starting fuel delivery:

2nd speed 1/min: 350
Charge press. hPa: -
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: -
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4
KF mm : K-OT
MS mm : 0,6...1,0
SVS max. mm : -

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9J
Edition : 01.08.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/11F1200 R277
Type number : 0 460 414 047
Customer Part-No. : 1329 163 C1

Customer-specific information
Customer : CASE

Engine : D 246/785

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 5,1...5,5

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm³/
1000H.: 75,0...76,0
Dispersion cm³/: 3,5
1000H.: (4,0)

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm³/
1000H.: 16,5...20,5
Dispersion cm³/: 3,0
1000H.: (4,0)

Full-load speed regulation:

Speed 1/min: 1260
Del.quantity cm³/
1000H.: 51,0...57,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,6...3,4
mm: (2,3...3,7)
2nd speed 1/min: 800
TD travel mm: 5,1...5,5
mm: (4,6...6,0)
3rd speed 1/min: 1150
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,6...3,2
2nd speed 1/min: 800
Supply-pump
pressure bar: 3,7...4,3
3rd speed 1/min: 1150

Supply-pump
pressure bar: 5,0...5,6

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1150
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1400
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1360
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 1310
Del.quantity cm³/: 10,0...0,0
1000H.: -
4th speed 1/min: 1260
Del.quantity cm³/: 51,0...57,0
1000H.: (49,5...58,5)
5th speed 1/min: 1150
Del.quantity cm³/: 76,0...79,0
1000H.: (74,9...80,1)
6th speed 1/min: 800
Del.quantity cm³/: 75,0...76,0
1000H.: (72,9...78,1)
7th speed 1/min: 500
Del.quantity cm³/: 66,0...70,0
1000H.: (64,6...71,4)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 16,5...20,5
1000H.: (14,0...23,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm³/: -
ind. 1000H.: 80,0

2nd speed 1/min: 450

Del.quantity cm³/: -
max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,3...5,7
MS	mm	: 1,1...1,5
SVS max.	mm	: 1,6
XK	mm	: 20,2...22,2
XL	mm	: 11,9...15,3

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 4,4 B
Edition : 07.11.88
replaces : 17.07.87
Calibrating oil : ISO 4113
Injection pump : VE 4/11F1150 R277-1
Type number : 0 460 414 048

Customer-specific information
Customer : CASE

Engine : D 268/844S

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm³/
1000H.: 80,7...81,7
Dispersion cm³/
1000H.: (4,0)

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm³/
1000H.: 16,5...20,5
Dispersion cm³/
1000H.: (4,0)

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm³/
1000H.: 52,0...58,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 0,8...1,6
mm: (0,5...1,9)
2nd speed 1/min: 800
TD travel mm: 3,0...3,4
mm: (2,5...3,9)
3rd speed 1/min: 1100
TD travel mm: 5,0...5,8
mm: (4,7...6,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 800
Supply-pump
pressure bar: 4,2...4,8
3rd speed 1/min: 1100
Supply-pump
pressure bar: 5,2...6,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1270
Del.quantity cm³/: 0,0...10,0
1000H.: (0,0...10,0)
3rd speed 1/min: 1220
Del.quantity cm³/: 10,0...40,0
1000H.: (10,0...40,0)
4th speed 1/min: 1190
Del.quantity cm³/: 52,0...58,0
1000H.: (50,5...59,5)
5th speed 1/min: 1000
Del.quantity cm³/: 82,2...85,2
1000H.: (80,7...86,7)
6th speed 1/min: 800
Del.quantity cm³/: 80,7...81,7
1000H.: (78,7...83,7)
7th speed 1/min: 500
Del.quantity cm³/: 76,7...80,7
1000H.: (75,2...82,2)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
Del.quantity cm³/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 16,5..20,5
1000H.: (14,0..23,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm³/: -
ind. 1000H: 80,0
2nd speed 1/min: 450
Del.quantity cm³/: -
max. 1000H : 80,0

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,4...5,7
MS	mm	: 1,2..1,45
SVS max.	mm	: 3,8
XK	mm	: 20,2...22,2
XL	mm	: 13,5...16,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 B
Edition : 18.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/11F2000 R288
Type number : 0 460 414 051

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC) : -

Start of delivery block
Piston stroke mm : 0,55
mm : +0,05

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: -
Setting value mm: -

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 30,5...31,5

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm³/
1000H.: 14,0...18,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm³/
1000H: 29,5...33,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed	1/min: -
TD travel	mm: -
	mm: -
2nd speed	1/min: -
TD travel	mm: -
	mm: -
3rd speed	1/min: -
TD travel	mm: -
	mm: -
4th speed	1/min: -
TD travel	mm: -
	mm: -

Supply-pump pressure characteristic:

1st speed	1/min: 500
Supply-pump pressure	bar: 3,1...3,7
2nd speed	1/min: 1000
Supply-pump pressure	bar: 4,8...5,4
3rd speed	1/min: 1250
Supply-pump pressure	bar: 5,6...6,2

4th speed 1/min: 1950
Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41...83
2nd speed 1/min: 1950
Overflow quantity cm³/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/1000H.: 37,0...40,6
2nd speed 1/min: 2350
Del.quantity cm³/1000H.: 0,0...10,0
3rd speed 1/min: 2200
Del.quantity cm³/1000H.: 17,0...25,0
4th speed 1/min: 2100
Del.quantity cm³/1000H.: 29,5...33,5
5th speed 1/min: 1950
Del.quantity cm³/1000H.: 37,0...40,6
6th speed 1/min: 1700
Del.quantity cm³/1000H.: 36,7...40,3
7th speed 1/min: 1000
Del.quantity cm³/1000H.: 33,8...34,8
8th speed 1/min: 500
Del.quantity cm³/1000H.: 30,5...31,5

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/1000H.: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/1000H.: 14,0...18,0
2nd speed 1/min: 500
Del.quantity cm³/1000H.: 7,5...15,5

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/1000H.: -
ind. 1000H.: 30,0

2nd speed 1/min: 480
Del.quantity cm³/1000H.: -
max. 1000H.: 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : K-OT
MS mm : 1,0...1,4
SVS max. mm : 3,8
XK mm : 17,0...19,0
XL mm : 10,9...14,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 C
Edition : 18.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/11F2000 R288-1
Type number : 0 460 414 052

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 0,55
mm: ±0,05

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: -
Setting value mm: -

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Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 30,5...31,5

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm³/
1000H.: 16,0...20,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm³/
1000H.: 30,5...34,5
Dispersion cm³/: 3,0
1000H.: (4,0)

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: -
TD travel mm: -

2nd speed 1/min: -
TD travel mm: -

3rd speed 1/min: -
TD travel mm: -

4th speed 1/min: -
TD travel mm: -

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7

2nd speed 1/min: 1000

Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1250

Supply-pump
pressure bar: 5,6...6,2
4th speed 1/min: 1950
Supply-pump
pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
2nd speed 1/min: 2350
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm³/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm³/: 30,5...34,5
1000H.: (27,5...37,5)
5th speed 1/min: 1950
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm³/: 37,7...41,3
1000H.: (37,0...42,0)
7th speed 1/min: 1000
Del.quantity cm³/: 34,8...35,8
1000H.: (32,8...37,8)
8th speed 1/min: 500
Del.quantity cm³/: 30,5...31,5
1000H.: (26,0...36,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 16,0...20,0
1000H.: (14,0...22,0)
2nd speed 1/min: 500

Del.quantity cm³/: 7,5...15,5
1000H.: (5,5...17,5)

Arrangement of drivers on engine-
speed lever for exhaust-gas-
recirculation valve linkage (guage)

1st speed 1/min: 1250
Del.quantity cm³/: 23,0...24,0
1000H.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 480
Del.quantity cm³/: -
max. 1000H : 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-OT
MS	mm	: 1,0...1,4
SVS max.	mm	: 3,8
XK	mm	: 17,0...19,0
XL	mm	: 10,9...14,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 D
Edition : 18.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/11F2000 R288-2
Type number : 0 460 414 055

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Start of delivery block
Piston stroke mm: 0,55
mm: ±0,05

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: -
Setting value mm: -

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 30,5...31,5

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm³/
1000H.: 14,0...18,0

Full-load speed regulation:

Speed 1/min: 2100
Del.quantity cm³/
1000H.: 29,5...33,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed	1/min: -
TD travel	mm: -
	mm: -
2nd speed	1/min: -
TD travel	mm: -
	mm: -
3rd speed	1/min: -
TD travel	mm: -
	mm: -
4th speed	1/min: -
TD travel	mm: -
	mm: -

Supply-pump pressure characteristic:

1st speed	1/min: 500
Supply-pump pressure	bar: 3,1...3,7
2nd speed	1/min: 1000
Supply-pump pressure	bar: 4,8...5,4
3rd speed	1/min: 1250
Supply-pump pressure	bar: 5,6...6,2

4th speed 1/min: 1950
Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
2nd speed 1/min: 2350
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm³/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm³/: 29,5...33,5
1000H.: (26,5...36,5)
5th speed 1/min: 1950
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm³/: 36,7...40,3
1000H.: (36,0...41,0)
7th speed 1/min: 1000
Del.quantity cm³/: 33,8...34,8
1000H.: (31,8...36,8)
8th speed 1/min: 500
Del.quantity cm³/: 30,5...31,5
1000H.: (26,0...36,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
2nd speed 1/min: 500
Del.quantity cm³/: 7,5...15,5
1000H.: (5,5...17,5)

Arrangement of drivers on engine-speed lever for exhaust-gas-recirculation valve linkage (guage)

1st speed 1/min: 1250
Del.quantity cm³/: 23,0...24,0
1000H.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H.: 30,0

2nd speed 1/min: 480
Del.quantity cm³/: -
max. 1000H.: 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-0T
MS	mm	: 1,0...1,4
SVS max.	mm	: 3,8
XK	mm	: 17,0...19,0
XL	mm	: 10,9...14,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 2,5 E
Edition : 18.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/11F2000 R288-3
Type number : 0 460 414 062

Customer-specific information
Customer : FORD

Engine : 2,5 DI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 023

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC) : -

Start of delivery block
Piston stroke mm: 0,55
mm: +0,05

Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: -
Setting value mm: -

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 500
Del. quantity cm³/
1000H.: 30,5...31,5

Low-idle speed regulation:

Speed 1/min: 425
Del. quantity cm³/
1000H.: 14,0...18,0

Full-load speed regulation:

Speed 1/min: 2100
Del. quantity cm³/
1000H.: 29,5...33,5

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 62,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: -
TD travel mm: -
mm: -
2nd speed 1/min: -
TD travel mm: -
mm: -
3rd speed 1/min: -
TD travel mm: -
mm: -
4th speed 1/min: -
TD travel mm: -
mm: -

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1000
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 1250
Supply-pump
pressure bar: 5,6...6,2

4th speed 1/min: 1950
Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1950
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950
HBA stroke mm: 10,0
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
2nd speed 1/min: 2350
Del.quantity cm³/: 0,0...10,0
1000H.: -
3rd speed 1/min: 2200
Del.quantity cm³/: 17,0...25,0
1000H.: (15,0...27,0)
4th speed 1/min: 2100
Del.quantity cm³/: 29,5...33,5
1000H.: (26,5...36,5)
5th speed 1/min: 1950
Del.quantity cm³/: 37,0...40,6
1000H.: (36,3...41,3)
6th speed 1/min: 1700
Del.quantity cm³/: 36,7...40,3
1000H.: (36,0...41,0)
7th speed 1/min: 1000
Del.quantity cm³/: 33,8...34,8
1000H.: (31,8...36,8)
8th speed 1/min: 500
Del.quantity cm³/: 30,5...31,5
1000H.: (26,0...36,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del.quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
2nd speed 1/min: 500
Del.quantity cm³/: 7,5...15,5
1000H.: (5,5...17,5)

Arrangement of drivers on engine-speed lever for exhaust-gas-recirculation valve linkage (guage)

1st speed 1/min: 1250
Del.quantity cm³/: 23,0...24,0
1000H.: (21,0...26,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H.: 30,0

2nd speed 1/min: 480
Del.quantity cm³/: -
max. 1000H.: 34,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-OT
MS	mm	: 1,0...1,4
SVS max.	mm	: 3,8
XK	mm	: 17,0...19,0
XL	mm	: 10,9...14,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6L
Edition : 07.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F1350 R257-1
Type number : 0 460 414 064
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8040.25.207+

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,4
(from BDC) : ±0,02(0,04)

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000

Charge press. hPa: 1000
Setting value mm: 2,2...2,6

Supply-pump pressure:

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value bar: 4,9...5,5

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 97,0...98,0
Dispersion cm³ / : 5,0
1000H.: (5,0)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del. quantity cm³/
1000H.: 68,5...69,5

Low-idle speed regulation:

Speed 1/min: 350
Del. quantity cm³/
1000H.: 22,0...26,0
Dispersion cm³ / : 3,5
1000H.: (4,0)

Full-load speed regulation:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 34,0...40,0

Start:

Speed 1/min: 100
Del. quantity : 85,0...125,0
mind cm³/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
TD travel mm: 0,5...1,3
mm: (0,2...1,6)
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 2,2...2,6
mm: (1,7...3,1)
3rd speed 1/min: 1350

Charge press. hPa: 1000
TD travel mm: 3,7...4,5
mm: (3,4...4,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2,6...3,2
2nd speed 1/min: 850
Charge press. hPa: 1000
Supply-pump pressure bar: 4,2...4,8
3rd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 4,9...5,5
4th speed 1/min: 1350
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1350
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 500
Charge-air pressure-setting point hPa: 250
Del.quantity cm³/: 81,0...82,0
1000H.: (78,4...84,5)
2nd speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
3rd speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/: 34,0...40,0
1000H.: (31,0...43,0)
4th speed 1/min: 1350
Charge press. hPa: 1000
Del.quantity cm³/: 93,5...96,5
1000H.: (92,0...98,0)
5th speed 1/min: 800
Charge press. hPa: 1000
Del.quantity cm³/: 97,0...98,0
1000H.: (94,0...100,5)
6th speed 1/min: 500
Charge press. hPa: 1000

Del.quantity cm³/: 90,0...93,0
1000H.: (88,5...94,5)
7th speed 1/min: 500
Charge press. hPa: 250
Del.quantity cm³/: 81,0...82,0
1000H.: (78,5...84,5)
8th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm³/: 68,5...69,5
1000H.: (66,0...72,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1350
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 350
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 22,0...26,0
1000H.: (19,0...29,0)
2nd speed 1/min: 400
Del.quantity cm³/: 2,5...9,5
1000H.: (2,5...9,5)
3rd speed 1/min: 430
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm³/: 90,0...130,0
ind. 1000H: 90,0
2nd speed 1/min: 250
Del.quantity cm³/: 41,0...56,0
max. 1000H : 56,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,1...5,5
MS mm : 1,2...1,6

XK mm : 17,0...19,0
XL mm : 14,2...17,6

Remarks:

Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 4,1E
Edition : 03.08.88
replaces : 08.12,86
Calibrating oil : ISO 4113

Injection pump : VE 6/11F1625 L218-4
Type number : 0 460 416 054

Customer-specific information
Customer : VOLVO-PENTA

Engine : TAMD 41 125

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : 0,3
(from BDC): ±0,02

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3,9...4,3

Supply-pump pressure:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value bar: 6,1...6,7

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 80,0...81,0
Dispersion cm³ / : 5,0
1000H.: (5,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del. quantity cm³/
1000H.: 63,5...64,5

Low-idle speed regulation:

Speed 1/min: 350
Del. quantity cm³/
1000H.: 15,5...19,5
Dispersion cm³ / : 3,5
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 29,5...35,5

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,0...1,8
mm: (0,7...2,1)

2nd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,9...4,3
mm: (3,4...4,8)

3rd speed 1/min: 1400
Charge press. hPa: 1000
TD travel mm: 4,5...5,3
mm: (4,2...5,6)

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4,7...5,3
 2nd speed 1/min: 1200
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6,1...6,7
 3rd speed 1/min: 1625
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: (41...83)
 2nd speed 1/min: 1625
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: (55...138)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting point hPa: 260
 LDA stroke mm: 7,5
 Del.quantity cm³/1000H.: (71,5...72,2)
 2nd speed 1/min: 1975
 Charge press. hPa: 1000
 Del.quantity cm³/1000H.: (7,0...16,0)
 3rd speed 1/min: 1900
 Charge press. hPa: 1000
 Del.quantity cm³/1000H.: (29,5...35,5)
 5th speed 1/min: 1625
 Charge press. hPa: 1000
 Del.quantity cm³/1000H.: (76,0...79,0)
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 Del.quantity cm³/1000H.: (80,0...81,0)
 7th speed 1/min: 800
 Charge press. hPa: 1000
 Del.quantity cm³/1000H.: (84,0...87,0)
 8th speed 1/min: 800
 Charge press. hPa: 260
 Del.quantity cm³/1000H.: (71,5...72,5)
 9th speed 1/min: 600
 Charge press. hPa: -

Del.quantity cm³/1000H.: (63,5...64,5)
 1000H.: (61,0...67,0)

Zero delivery (stop):

Mech. shutoff:
 Speed 1/min: 1625
 Del.quantity cm³/1000H.: (0..3)

Electr. shutoff:

Speed 1/min: 350
 ELAB volt: 12,0
 Del.quantity cm³/1000H.: (0,0...3,0)
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
 Del.quantity cm³/1000H.: (15,5...19,5)
 2nd speed 1/min: 400
 Del.quantity cm³/1000H.: (3,0...9,0)
 3rd speed 1/min: 450
 Del.quantity cm³/1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Del.quantity cm³/ind.: -
 ind. 1000H: 85,0
 2nd speed 1/min: 500
 Del.quantity cm³/max.: -
 1000H : 80,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : -
 KF mm : -
 MS mm : 1,1...1,5
 SVS max. mm : -
 XK mm : 18,8...20,8
 XL mm : 12,2...15,6

Remarks:
 Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 4,1F
Edition : 08.11.88
replaces : 08.12,86
Calibrating oil : ISO 4113
Injection pump : VE 6/11F1625 L218-5
Type number : 0 460 416 055

Customer-specific information
Customer : VOLVO-PENTA

Engine : TAMD 41 125

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : 0,3
(from BDC): +0,02 (0,04)

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3,9...4,3

Supply-pump pressure:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value bar: 6,1...6,7

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 80,0...81,0
Dispersion cm³ : 5,0
1000H.: (5,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del.quantity cm³/
1000H.: 63,5...64,5

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm³/
1000H.: 15,5...19,5
Dispersion cm³ : 3,5
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1900
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 29,5...35,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,0...1,8
mm: (0,7...2,1)
2nd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,9...4,3
mm: (3,4...4,8)
3rd speed 1/min: 1400
Charge press. hPa: 1000
TD travel mm: 4,5...5,3
mm: (4,2...5,6)

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump pressure bar: 4,7...5,3
 2nd speed 1/min: 1200
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6,1...6,7
 3rd speed 1/min: 1625
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 41...83
 2nd speed 1/min: 1625
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 55...138
 3rd speed 1/min: 1625
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 40...153

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting point hPa: 260
 LDA stroke mm: 7,5
 Del.quantity cm³/: 71,5...72,2
 1000H.: (69,0...75,0)
 2nd speed 1/min: 1975
 Charge press. hPa: 1000
 Del.quantity cm³/: 7,0...16,0
 1000H.: (5,5...17,5)
 4th speed 1/min: 1900
 Charge press. hPa: 1000
 Del.quantity cm³/: 29,5...35,5
 1000H.: (28,5...36,5)
 5th speed 1/min: 1625
 Charge press. hPa: 1000
 Del.quantity cm³/: 76,0...79,0
 1000H.: (73,5...81,5)
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 Del.quantity cm³/: 80,0...81,0
 1000H.: (78,2...82,8)
 7th speed 1/min: 800
 Charge press. hPa: 1000
 Del.quantity cm³/: 84,0...87,0
 1000H.: (82,5...88,5)
 8th speed 1/min: 800
 Charge press. hPa: 260
 Del.quantity cm³/: 71,5...72,5
 1000H.: (69,0...75,0)
 9th speed 1/min: 600
 Charge press. hPa: -

Del.quantity cm³/: 63,5...64,5
 1000H.: (61,0...67,0)

Zero delivery (stop):

Mech. shutoff:
 Speed 1/min: 1625
 Del.quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 350
 ELAB volt: 24,0
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
 Del.quantity cm³/: 15,5...19,5
 1000H.: (12,5...22,5)
 2nd speed 1/min: 400
 Del.quantity cm³/: 3,0...9,0
 1000H.: (1,5...10,5)
 3rd speed 1/min: 450
 Del.quantity cm³/: 0,0...3,0
 1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Del.quantity cm³/: -
 ind. 1000H.: 85,0
 2nd speed 1/min: 500
 Del.quantity cm³/: -
 max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
 min. voltage : 20,0
 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
 K mm : -
 KF mm : 5,1...5,5
 MS mm : 1,1...1,5
 SVS max. mm : 3,8

Remarks:
 Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 4,1H
Edition : 08.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/11F1800 L218-7
Type number : 0 460 416 062
Customer Part-No. :

Customer-specific information
Customer : VOLVO-PENTA

Engine : AQAD 41 MD

Power k: 120

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3,9...4,3

Supply-pump pressure:

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value bar: 6,0...6,6

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 74,5...75,5
Dispersion cm3/ : 5,0
1000H.: (5,0)

Full-load del. w/out charge press.:

Speed 1/min : 650
Del.quantity cm3/
1000H.: 63,0...64,0

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm3/
1000H.: 15,5...19,5
Dispersion cm3/ : 3,5
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 2000
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 34,0...40,0

Start:

Speed 1/min: 100
Del.quantity : 85,0...115,0
mind cm3/1000H.: 85,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 0,9...1,7
mm: (0,6...2,0)
2nd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,9...4,3
mm: (3,4...4,8)
3rd speed 1/min: 1400
Charge press. hPa: 1000
TD travel mm: 4,5...5,3
mm: (4,2...5,6)

Supply-pump pressure characteristic:

1st speed 1/min: 800
Charge press. hPa: 1000

Supply-pump
pressure bar: 5,0...5,6
2nd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump
pressure bar: 6,0...6,6
3rd speed 1/min: 1800
Charge press. hPa: 1000
Supply-pump
pressure bar: 7,4...8,0

Overflow quantity at overflow valve:

1st speed 1/min: 650
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1800
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2130
Charge-air pressure-setting
point hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 2050
Charge press. hPa: 1000
Del.quantity cm³/: 3,0...13,0
1000H.: (3,0...13,0)
3rd speed 1/min: 2000
Charge press. hPa: 1000
Del.quantity cm³/: 34,0...40,0
1000H.: (36,0...44,0)
4th speed 1/min: 1800
Charge press. hPa: 1000
Del.quantity cm³/: 71,0...74,0
1000H.: (69,0...76,0)
5th speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/: 74,5...75,5
1000H.: (72,7...77,3)
6th speed 1/min: 900
Charge press. hPa: 1000
Del.quantity cm³/: 82,5...85,5
1000H.: (81,0...87,0)
7th speed 1/min: 900
Charge press. hPa: 300
Del.quantity cm³/: 68,5...69,5
1000H.: (66,0...72,0)
8th speed 1/min: 650
Del.quantity cm³/: 63,0...64,0
1000H.: (60,5...66,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1800
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 350
ELAB volt: 12,0
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm³/: 15,5...19,5
1000H.: (12,5...22,5)
2nd speed 1/min: 400
Del.quantity cm³/: 3,0...9,0
1000H.: (1,5...10,5)
3rd speed 1/min: 450
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: 85,0...115,0
ind. 1000H.: 85,0
2nd speed 1/min: 500
Del.quantity cm³/: 55,0...85,0
max. 1000H.: 85,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,2...5,5
MS mm : 1,2...1,4
SVS max. mm : 3,8

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 E
Edition : 02.08.88
replaces : 11.86
Calibrating oil : ISO 4113
Injection pump : VE 4/12F1100 R226
Type number : 0 460 424 022

Customer-specific information
Customer : CDC

Engine : 4 BT 390

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02$

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,1...4,7

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm³/
1000H.: 65,5...66,5
Dispersion cm³/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 335
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1150
Del.quantity cm³/
1000H: 53,0...59,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 900
TD travel mm: 2,3...2,7
mm: (1,8...3,2)
3rd speed 1/min: 1100
TD travel mm: 3,1...3,9
mm: (2,8...4,2)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,3...2,9
2nd speed 1/min: 900
Supply-pump
pressure bar: 4,1...4,7
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1220
Del.quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)
3rd speed 1/min: 1180
Del.quantity cm³/: 15,0...55,0
1000H.: (15,0...55,0)
4th speed 1/min: 1150
Del.quantity cm³/: 53,0...59,0
1000H.: (50,0...62,0)
5th speed 1/min: 1100
Del.quantity cm³/: 63,5...66,5
1000H.: (62,0...68,0)
6th speed 1/min: 900
Del.quantity cm³/: 65,5...66,5
1000H.: (63,0...69,0)
7th speed 1/min: 750
Del.quantity cm³/: 68,0...72,0
1000H.: (66,0...74,0)
8th speed 1/min: 500
Del.quantity cm³/: 67,0...75,0
1000H.: (65,0...77,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 335
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 335
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 500

Del.quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 80,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,0...5,4
MS mm : 1,1...1,5
SVS max. mm : 3,5
XK mm : 18,8...20,8
XL mm : 12,2...15,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9E1
Edition : 02.08.88
replaces : 11.86
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R226-1
Type number : 0 460 424 023

Customer-specific information
Customer : CDC

Engine : 4 BT 390

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,06)$

Start of delivery block
Piston stroke mm: 1,8
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm³/
1000H.: 67,0...68,0
Dispersion cm³/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1190
Del.quantity cm³/
1000H.: 47,0...53,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 0,8...1,6
mm: (0,5...1,9)
2nd speed 1/min: 900
TD travel mm: 2,0...2,4
mm: (1,5...2,9)
3rd speed 1/min: 1150
TD travel mm: 3,2...4,0
mm: (2,9...4,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,5...3,1
2nd speed 1/min: 900
Supply-pump
pressure bar: 4,2...4,8
3rd speed 1/min: 1150

Supply-pump
pressure bar: 5,2...5,8

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41...83
2nd speed 1/min: 1150
Overflow quantity cm³/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 1300
Del. quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1260
Del. quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)
3rd speed 1/min: 1220
Del. quantity cm³/: 15,0...55,0
1000H.: (15,0...55,0)
4th speed 1/min: 1190
Del. quantity cm³/: 47,0...53,0
1000H.: (44,0...56,0)
5th speed 1/min: 1150
Del. quantity cm³/: 63,5...66,5
1000H.: (62,0...68,0)
6th speed 1/min: 900
Del. quantity cm³/: 67,0...68,0
1000H.: (64,5...70,5)
7th speed 1/min: 750
Del. quantity cm³/: 69,5...73,5
1000H.: (67,5...75,5)
8th speed 1/min: 500
Del. quantity cm³/: 68,0...76,0
1000H.: (66,0...78,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1150
Del. quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 500

Del. quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm³/: -
ind. 1000H.: 80,0

2nd speed 1/min: 240
Del. quantity cm³/: -
max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,0...5,4
MS mm : 1,1...1,5
SVS max. mm : 4,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N8
Edition : 08.11.88
replaces : 08.07.87
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R231-1
Type number : 0 460 424 029
Customer Part-No. : 390 8196

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9

Power k: 82
Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 688 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,06)$

Start of delivery block
Piston stroke mm: 1,55
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 5,1...5,7

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 85,5...86,5
Dispersion cm³/ : 4,0
1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 500
Del. quantity cm³/
1000H.: 66,5...67,5

Low-idle speed regulation:

Speed 1/min: 375
Del. quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/ : 5,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1170
Charge press. hPa: 1000
Del. quantity cm³/
1000H: 63,0...69,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 2,2...3,0
mm: (1,9...3,3)
2nd speed 1/min: 750
Charge press. hPa: 1000

TD travel mm: 3,8...4,2
mm: (3,3...4,7)
3rd speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 4,9...5,7
mm: (4,6...6,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,9...4,5
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 5,1...5,7
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41...83
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 350
LDA stroke mm: 6,6
Del.quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)
2nd speed 1/min: 1260
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...2,0
1000H.: -
3rd speed 1/min: 1250
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1220
Charge press. hPa: 1000
Del.quantity cm³/: 15,0...0,0
1000H.: -
5th speed 1/min: 1170
Charge press. hPa: 1000
Del.quantity cm³/: 63,0...69,0
1000H.: (61,0...71,0)
6th speed 1/min: 1100
Charge press. hPa: 1000
Del.quantity cm³/: 77,5...80,5
1000H.: (76,0...82,0)

7th speed 1/min: 1000
Charge press. hPa: 1000
Del.quantity cm³/: 80,0...83,0
1000H.: (78,5...84,5)
8th speed 1/min: 850
Charge press. hPa: 1000
Del.quantity cm³/: 85,5...86,5
1000H.: (83,0...89,0)
9th speed 1/min: 700
Charge press. hPa: 350
Del.quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)
10th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm³/: 90,0...98,0
1000H.: (90,3...97,7)
11th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm³/: 66,5...67,5
1000H.: (64,0...70,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 65,0
2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H.: 65,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,0...5,4

MS mm : 1,0...1,4
SVS max. mm : 2,2

Remarks:

Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 N9
Edition : 08.11.88
replaces : 08.07.87
Calibrating oil : ISO 4113
Injection pump : VE 4/12F1150 R231-1
Type number : 0 460 424 029
Customer Part-No. : 390 9407

Customer-specific information
Customer : CDC

Engine : 4 BTA 3.9

Power k: 82
Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 688 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,55
mm: $\pm 0,02(0,06)$

Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 5,1...5,7

Full-load del. with charge press.:

Speed 1/min: 850
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 85,5...86,5
Dispersion cm³ / : 4,0
1000H : -

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 66,5...67,5

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³ / : 5,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1170
Charge press. hPa: 1000
Del.quantity cm³/
1000H: 63,0...69,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
TD travel mm: 2,2...3,0
mm: (1,9...3,3)

2nd speed 1/min: 750
Charge press. hPa: 1000

TD travel mm: 3,8...4,2
mm: (3,3...4,7)
3rd speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 4,9...5,7
mm: (4,6...6,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,9...4,5
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 5,1...5,7
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 350
LDA stroke mm: 6,6
Del. quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)
2nd speed 1/min: 1260
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...2,0
1000H.: -
3rd speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...15,0
1000H.: -
4th speed 1/min: 1220
Charge press. hPa: 1000
Del. quantity cm³/: 15,0...0,0
1000H.: -
5th speed 1/min: 1170
Charge press. hPa: 1000
Del. quantity cm³/: 63,0...69,0
1000H.: (61,0...71,0)
6th speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm³/: 77,5...80,5
1000H.: (76,0...82,0)

7th speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/: 80,0...83,0
1000H.: (78,5...84,5)
8th speed 1/min: 850
Charge press. hPa: 1000
Del. quantity cm³/: 85,5...86,5
1000H.: (83,0...89,0)
9th speed 1/min: 700
Charge press. hPa: 350
Del. quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)
10th speed 1/min: 500
Charge press. hPa: 1000
Del. quantity cm³/: 90,0...98,0
1000H.: (90,3...97,7)
11th speed 1/min: 500
Del. quantity cm³/: 66,5...67,5
1000H.: (64,0...70,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del. quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm³/: -
ind. 1000H: 65,0
2nd speed 1/min: 240
Del. quantity cm³/: -
max. 1000H: 65,0

Shutoff electromagnet:

Cut-in min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,0...5,4
MS mm : 1,0...1,4

SVS max. mm : 2,2

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 4,0 B
Edition : 08.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1400 R279
Type number : 0 460 424 036
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : NA 4.40 LKW

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 950
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 950
Setting value bar: 5,4...6,0

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm3/
1000H.: 78,5...79,5
Dispersion cm3/: 3,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm3/
1000H.: 21,0...25,0
Dispersion cm3/: 3,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1600
Del.quantity cm3/
1000H.: 17,0...23,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 90.0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,5...1,1
mm: (0,1...1,5)
2nd speed 1/min: 950
TD travel mm: 2,3...2,7
mm: (1,8...3,2)
3rd speed 1/min: 1400
TD travel mm: 2,9...3,7
mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,4...4,0
2nd speed 1/min: 800
Supply-pump
pressure bar: 4,8...5,4
3rd speed 1/min: 950
Supply-pump
pressure bar: 5,4...6,0
4th speed 1/min: 1400

Supply-pump
pressure bar: 7,2...7,8

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1400
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1660
Del. quantity cm³: 0,0...3,0
1000H.: -
2nd speed 1/min: 1600
Del. quantity cm³: 17,0...23,0
1000H.: (14,0...26,0)
3rd speed 1/min: 1500
Del. quantity cm³: 53,0...61,0
1000H.: (52,0...62,0)
4th speed 1/min: 1400
Del. quantity cm³: 70,5...73,5
1000H.: (69,0...75,0)
5th speed 1/min: 1100
Del. quantity cm³: 77,3...79,7
1000H.: (75,5...81,5)
6th speed 1/min: 800
Del. quantity cm³: 78,5...79,5
1000H.: (76,0...82,0)
7th speed 1/min: 500
Del. quantity cm³: 68,0...71,0
1000H.: (66,5...72,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400
Del. quantity cm³: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 1400
ELAB volt: -
Del. quantity cm³: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³: 19,5..23,5
1000H.: (16,5..26,5)
2nd speed 1/min: 350
Del. quantity cm³: 14,5..20,5
1000H.: (12,5..22,5)
3rd speed 1/min: 400

Del. quantity cm³: 5,0...12,0
1000H.: (4,5...12,5)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del. quantity cm³: -
ind. 1000H.: 100,0
2nd speed 1/min: 200
Del. quantity cm³: -
max. 1000H.: 65,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: K-OT
MS	mm	: 1,1...1,5
XK	mm	: 17,0...19,0
XL	mm	: 9,6...13,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 4,0 C
Edition : 08.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1300 R280
Type number : 0 460 424 037

Customer-specific information
Customer : PERKINS

Engine : T4.40

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 950
Charge press. hPa: 1000
Setting value mm: 1,5...1,9

Supply-pump pressure:

Speed 1/min: 950
Charge press. hPa: 1000
Setting value bar: 4,6...5,2

Full-load del. with charge press.:

Speed 1/min: 1000
Del. quantity cm³/
1000H.: 88,0...98,0
Dispersion cm³/
1000H.: (4,0)

Full-load del. w/out charge press.:

Speed 1/min : 700
Del. quantity cm³/
1000H.: 85,0...86,0

Low-idle speed regulation:

Speed 1/min: 300
Del. quantity cm³/
1000H.: 22,0...26,0
Dispersion cm³/
1000H.: (5,0)

Full-load speed regulation:

Speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 47,0...53,0

Start:

Speed 1/min: 100
Del. quantity : 82,0...122,0
mind cm³/1000H.: 82,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
TD travel mm: 0,3...1,1
mm: (0,0...1,4)

2nd speed 1/min: 950
Charge press. hPa: 1000
TD travel mm: 1,5...1,9
mm: (1,0...2,4)

3rd speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 2,0...2,8
mm: (1,7...3,1)

4th speed 1/min: 1300
Charge press. hPa: 1000
TD travel mm: 2,0...2,8
mm: (1,7...3,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump pressure bar: 2,7...3,3
bar: (2,5...3,5)
2nd speed 1/min: 950
Charge press. hPa: 1000
Supply-pump pressure bar: 4,6...5,2
bar: (4,4...5,4)
3rd speed 1/min: 1300
Charge press. hPa: 1000
Supply-pump pressure bar: 6,0...6,6
bar: (5,8...6,8)

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity : 41...83
cm3/10s: (26...98)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Overflow quantity : 55...138
cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 300
LDA stroke mm: 7,0
Del.quantity cm3/: 88,5...89,5
1000H.: (86,0...92,0)
2nd speed 1/min: 1560
Charge press. hPa: 1000
Del.quantity cm3/: 0,0...2,6
1000H.: (0,0...2,6)
3rd speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm3/: 11,0...19,0
1000H.: (8,0...22,0)
4th speed 1/min: 1400
Charge press. hPa: 1000
Del.quantity cm3/: 47,0...53,0
1000H.: (44,0...56,0)
5th speed 1/min: 1300
Charge press. hPa: 1000
Del.quantity cm3/: 85,5...88,5
1000H.: (84,0...90,0)
6th speed 1/min: 1000
Charge press. hPa: 1000
Del.quantity cm3/: 92,5...93,5
1000H.: (90,0...96,0)

7th speed 1/min: 700
Charge press. hPa: 1000
Del.quantity cm3/: 95,0...98,0
1000H.: (93,5...99,5)
8th speed 1/min: 700
Charge press. hPa: 300
Del.quantity cm3/: 88,5...89,5
1000H.: (86,0...92,0)
9th speed 1/min: 700
Charge press. hPa: -
Del.quantity cm3/: 85,0...86,0
1000H.: (82,5...88,5)
10th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm3/: 76,5...79,5
1000H.: (75,0...81,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1300
Del.quantity cm3/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 300
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300
Del.quantity cm3/: 22,0...26,0
1000H.: (19,0...29,0)
2nd speed 1/min: 350
Del.quantity cm3/: 9,0...15,0
1000H.: (7,0...17,0)
3rd speed 1/min: 400
Del.quantity cm3/: 0,0...2,6
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm3/: 100,0...140,0
ind. 1000H: 95,0
2nd speed 1/min: 250
Del.quantity cm3/: 20,0...70,0
max. 1000H : 70,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4

KF mm : K-OT

MS mm : 1,1...1,5

Remarks:

Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 4,4 A
Edition : 08.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/12F1350 R292
Type number : 0 460 242 040
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0824GF

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,4
(from BDC): ±0,02(0,04)

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000

Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1000
Setting value bar: 5,5...6,1

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm³/
1000H.: 99,5...100,5
Dispersion cm³/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm³/
1000H.: 24,0...30,0
Dispersion cm³/: 3,5
1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1400
Del.quantity cm³/
1000H: 83,0...89,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Load-dependent start of delivery:

Speed 1/min: 1000

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 0,7...1,5
mm: (0,4...1,8)
2nd speed 1/min: 1000
TD travel mm: 3,0...3,4
mm: (2,5...3,9)
3rd speed 1/min: 1100
TD travel mm: 3,9...4,7
mm: (3,6...5,0)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,5...4,1

2nd speed 1/min: 1000
Supply-pump pressure bar: 5,5...6,1
3rd speed 1/min: 1350
Supply-pump pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow quantity cm³/10s: 41...83
2nd speed 1/min: 1350
Overflow quantity cm³/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 1600
Del.quantity cm³/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1550
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1500
Del.quantity cm³/: 15,0...0,0
1000H.: -
4th speed 1/min: 1400
Del.quantity cm³/: 83,0...89,0
1000H.: (81,0...91,0)
5th speed 1/min: 1350
Del.quantity cm³/: 93,5...96,5
1000H.: (92,0...98,0)
6th speed 1/min: 1000
Del.quantity cm³/: 99,5...100,5
1000H.: (97,0...103,0)
7th speed 1/min: 800
Del.quantity cm³/: 98,0...102,0
1000H.: (96,4...103,6)
8th speed 1/min: 600
Del.quantity cm³/: 95,0...99,0
1000H.: (93,4...100,6)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 300
ELAB volt: -
Del.quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300
Del.quantity cm³/: 24,0...30,0
1000H.: (22,0...32,0)
2nd speed 1/min: 450

Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm³/: -
ind. 1000H.: 90,0

2nd speed 1/min: 450
Del.quantity cm³/: -
max. 1000H.: 90,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,5
MS mm : 0,8...1,2
SVS max. mm : 5,0

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U2
Edition : 09.11.88
replaces : 07.07.87
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1325 R198
Type number : 0 460 426 063
Customer Part-No. : 390 8212

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

Power k: 93
Speed 1/mi: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 688 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,06)$

Start of delivery block
Piston stroke mm: 1,5
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 850
Setting value bar: 3,9...4,5

Full-load del. w/out charge press.:

Speed 1/min : 1100
Del.quantity cm³/
1000H.: 56,5...57,5
Dispersion cm³/: 4,0
1000H.: -

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 5,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1450
Del.quantity cm³/
1000H.: 37,0...43,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 50,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 850
TD travel mm: 3,8...4,2
mm: (3,3...4,7)
3rd speed 1/min: 1100
TD travel mm: 5,4...6,2
mm: (5,1...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,5...3,1
2nd speed 1/min: 850

Supply-pump pressure bar: 3,9...4,5
3rd speed 1/min: 1100
Supply-pump pressure bar: 3,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1400
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1580
Del. quantity cm3/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1530
Del. quantity cm3/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1490
Del. quantity cm3/: 15,0...0,0
1000H.: -
4th speed 1/min: 1450
Del. quantity cm3/: 37,0...43,0
1000H.: (35,0...45,0)
5th speed 1/min: 1400
Del. quantity cm3/: 53,5...56,5
1000H.: (52,0...58,0)
6th speed 1/min: 1100
Del. quantity cm3/: 56,5...57,5
1000H.: (54,0...60,0)
7th speed 1/min: 850
Del. quantity cm3/: 52,5...56,5
1000H.: (50,8...58,2)
8th speed 1/min: 500
Del. quantity cm3/: 39,0...47,0
1000H.: (39,3...46,7)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del. quantity cm3/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm3/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del. quantity cm3/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm3/: -
ind. 1000H.: 60,0

2nd speed 1/min: 400
Del. quantity cm3/: -
max. 1000H.: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 1,3...1,7
SVS max.	mm	: 1,2
XK	mm	: 18,8...20,8
XL	mm	: 9,6...13,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 T
Edition : 09.11.88
replaces : 11.86
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1000 R225-12
Type number : 0 460 426 081

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,0
mm : $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm³/
1000H.: 46,5...47,5
Dispersion cm³/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 365
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1050
Del.quantity cm³/
1000H.: 30,0...36,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 40,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,1...1,9
mm: (0,8...2,2)
2nd speed 1/min: 750
TD travel mm: 3,3...3,7
mm: (2,8...4,2)
3rd speed 1/min: 1000
TD travel mm: 5,3...6,1
mm: (5,0...6,4)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1000

Supply-pump
pressure bar: 4,6...5,2

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1150
Del. quantity cm³/1000H.: 0,0...3,0
(0,0...3,0)
2nd speed 1/min: 1100
Del. quantity cm³/1000H.: 0,0...15,0
(0,0...15,0)
3rd speed 1/min: 1060
Del. quantity cm³/1000H.: 15,0...45,0
(15,0...45,0)
4th speed 1/min: 1050
Del. quantity cm³/1000H.: 30,0...36,0
(27,0...39,0)
5th speed 1/min: 1000
Del. quantity cm³/1000H.: 44,5...47,5
(43,0...49,0)
6th speed 1/min: 900
Del. quantity cm³/1000H.: 46,5...49,5
(44,5...51,5)
7th speed 1/min: 750
Del. quantity cm³/1000H.: 46,5...47,5
(43,0...50,0)
8th speed 1/min: 500
Del. quantity cm³/1000H.: 33,0...41,0
(31,0...43,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1000
Del. quantity cm³/1000H.: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 365
ELAB volt: -
Del. quantity cm³/1000H.: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 365
Del. quantity cm³/1000H.: 8,0...14,0
(6,0...16,0)
2nd speed 1/min: 450

Del. quantity cm³/1000H.: 0,0...4,0
(0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm³/ind. 1000H.: -
45,0

2nd speed 1/min: 370
Del. quantity cm³/max. 1000H.: -
50,0

Shutoff electromagnet:

Cut-in min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 1,0...1,4
SVS max.	mm	: 1,5
XK	mm	: 18,8...20,8
XL	mm	: 8,9...12,3

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 T1
Edition : 09.11.88
replaces : 11.86
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1100 R225-13
Type number : 0 460 426 082

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,5
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm³/
1000H.: 71,5...72,5
Dispersion cm³/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1140
Del.quantity cm³/
1000H: 53,0...59,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 750
TD travel mm: 3,4...3,8
mm: (2,9...4,3)
3rd speed 1/min: 1100
TD travel mm: 5,2...6,0
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1100

Supply-pump
pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1220
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1200
Del.quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)
3rd speed 1/min: 1160
Del.quantity cm³/: 15,0...45,0
1000H.: (15,0...45,0)
4th speed 1/min: 1140
Del.quantity cm³/: 53,0...59,0
1000H.: (50,0...62,0)
5th speed 1/min: 1100
Del.quantity cm³/: 66,5...69,5
1000H.: (65,0...71,0)
6th speed 1/min: 900
Del.quantity cm³/: 71,5...72,5
1000H.: (69,0...75,0)
7th speed 1/min: 750
Del.quantity cm³/: 70,5...74,5
1000H.: (68,5...76,5)
8th speed 1/min: 500
Del.quantity cm³/: 56,0...64,0
1000H.: (54,0...66,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: 24,0
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450

Del.quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 60,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H.: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,1
XK	mm	: 20,2...22,2
XL	mm	: 10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U4
Edition : 09.11.88
replaces : 08.07.88
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-13
Type number : 0 460 426 082
Customer Part-No. : 390 8200

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,5
mm : $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm³/
1000H.: 73,5...74,5
Dispersion cm³/: 4,0
1000H.: -

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 5,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1150
Del.quantity cm³/
1000H.: 49,5...55,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,1...2,9
mm: (1,8...3,2)
2nd speed 1/min: 750
TD travel mm: 4,3...4,7
mm: (3,8...5,2)
3rd speed 1/min: 1100
TD travel mm: 5,8...6,6
mm: (5,5...6,9)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,6...3,2
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,7...4,3
3rd speed 1/min: 1100

Supply-pump
pressure bar: 5,1...5,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del. quantity cm³/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1210
Del. quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1170
Del. quantity cm³/: 15,0...0,0
1000H.: -
4th speed 1/min: 1150
Del. quantity cm³/: 49,5...55,5
1000H.: (47,5...57,5)
5th speed 1/min: 1100
Del. quantity cm³/: 67,5...70,5
1000H.: (66,0...72,0)
6th speed 1/min: 900
Del. quantity cm³/: 71,0...74,0
1000H.: (69,5...75,5)
7th speed 1/min: 750
Del. quantity cm³/: 73,5...74,5
1000H.: (71,0...77,0)
8th speed 1/min: 500
Del. quantity cm³/: 61,0...69,0
1000H.: (61,0...69,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del. quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del. quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del. quantity cm³/: -
ind. 1000H.: 85,0

2nd speed 1/min: 240
Del. quantity cm³/: -
max. 1000H.: 85,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,1
XK	mm	: 20,2...22,2
XL	mm	: 10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U6
 Edition : 09.11.88
 replaces : 08.07.87
 Calibrating oil : ISO 4113
 Injection pump : VE 6/12F1100 R225-13
 Type number : 0 460 426 082
 Customer Part-No. : 390 8201

Customer-specific information
 Customer : CDC

Engine : 6BT-590

Power k: 106
 Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40...48
 electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
 assembly : 1 688 901 027

Opening
 pressure bar : 250...253

Perforated-plate
 diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
 x Wall thickness : 2
 x Length mm : 840

Start of delivery
 Prestroke mm : 0,3
 (from BDC): $\pm 0,02(0,04)$

Start of delivery block
 Piston stroke mm: 1,5
 mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
 Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
 Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

Speed 1/min : 750
 Del.quantity cm³/
 1000H.: 75,0...76,0
 Dispersion cm³/: 4,0
 1000H.: -

Low-idle speed regulation:

Speed 1/min: 375
 Del.quantity cm³/
 1000H.: 8,0...14,0
 Dispersion cm³/: 5,5
 1000H.: -

Full-load speed regulation:

Speed 1/min: 1100
 Del.quantity cm³/
 1000H.: 52,0...58,0

Start:

Speed 1/min: 100
 Del.quantity : -
 mind cm³/1000H.: 70,0

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
 TD travel mm: 1,4...2,2
 mm: (1,1...2,5)
 2nd speed 1/min: 750
 TD travel mm: 3,4...3,8
 mm: (2,9...4,3)
 3rd speed 1/min: 1050
 TD travel mm: 4,6...5,4
 mm: (4,3...5,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Supply-pump
 pressure bar: 2,6...3,2
 2nd speed 1/min: 750

Supply-pump pressure bar: 3,7...4,3
3rd speed 1/min: 1050
Supply-pump pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200
Del. quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1170
Del. quantity cm³/: 0,0...15,0
3rd speed 1/min: 1130
Del. quantity cm³/: 15,0...
1000H.: -
4th speed 1/min: 1100
Del. quantity cm³/: 52,0...58,0
1000H.: (50,0...60,0)
5th speed 1/min: 1050
Del. quantity cm³/: 68,5...71,5
1000H.: (67,0...73,0)
6th speed 1/min: 900
Del. quantity cm³/: 71,5...74,5
1000H.: (70,0...76,0)
7th speed 1/min: 750
Del. quantity cm³/: 75,0...76,0
1000H.: (72,5...78,5)
8th speed 1/min: 500
Del. quantity cm³/: 59,5...67,5
1000H.: (59,8...67,2)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del. quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del. quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Del. quantity cm³/: -
ind. 1000H.: 80,0

2nd speed 1/min: 250
Del. quantity cm³/: -
max. 1000H.: 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,1
XK	mm	: 20,2...22,2
XL	mm	: 10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U3
Edition : 09.11.88
replaces : 08.07.88
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1100 R225-13
Type number : 0 460 426 082
Customer Part-No. : 391 0251

Customer-specific information
Customer : CDC

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,5
mm : $\pm 0,02(0,06)$

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm³/
1000H.: 73,5...74,5
Dispersion cm³/: 4,0
1000H.: -

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 5,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1150
Del.quantity cm³/
1000H.: 49,5...55,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,1...2,9
mm: (1,8...3,2)
2nd speed 1/min: 750
TD travel mm: 4,3...4,7
mm: (3,8...5,2)
3rd speed 1/min: 1100
TD travel mm: 5,8...6,6
mm: (5,5...6,9)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,6...3,2
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,7...4,3
3rd speed 1/min: 1100

Supply-pump
pressure bar: 5,1...5,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del.quantity cm³/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1210
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1170
Del.quantity cm³/: 15,0...0,0
1000H.: -
4th speed 1/min: 1150
Del.quantity cm³/: 49,5...55,5
1000H.: (47,5...57,5)
5th speed 1/min: 1100
Del.quantity cm³/: 67,5...70,5
1000H.: (66,0...72,0)
6th speed 1/min: 900
Del.quantity cm³/: 71,0...74,0
1000H.: (69,5...75,5)
7th speed 1/min: 750
Del.quantity cm³/: 73,5...74,5
1000H.: (71,0...77,0)
8th speed 1/min: 500
Del.quantity cm³/: 61,0...69,0
1000H.: (61,3...68,7)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 85,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H.: 85,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,1
XK	mm	: 20,2...22,2
XL	mm	: 10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U5
Edition : 09.11.88
replaces : 08.07.87
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-13
Type number : 0 460 426 082
Customer Part-No. : 391 0252

Customer-specific information
Customer : CDC

Engine : 6BT-590

Power k: 106
Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,5
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,7...4,3

Full-load del. w/out charge press.:

Speed 1/min : 750
Del.quantity cm³/
1000H.: 75,0...76,0
Dispersion cm³/: 4,0
1000H.: -

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 8,0...14,0
Dispersion cm³/: 5,5
1000H.: -

Full-load speed regulation:

Speed 1/min: 1100
Del.quantity cm³/
1000H.: 52,0...58,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
2nd speed 1/min: 750
TD travel mm: 3,4...3,8
mm: (2,9...4,3)
3rd speed 1/min: 1050
TD travel mm: 4,6...5,4
mm: (4,3...5,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,6...3,2
2nd speed 1/min: 750

Supply-pump pressure bar: 3,7...4,3
3rd speed 1/min: 1050
Supply-pump pressure bar: 4,9...5,5

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1050
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200
Del.quantity cm³/: 0,0...3,0
1000H.: -
2nd speed 1/min: 1170
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1130
Del.quantity cm³/: 15,0...0,0
1000H.: -
4th speed 1/min: 1100
Del.quantity cm³/: 52,0...58,0
1000H.: (50,0...60,0)
5th speed 1/min: 1050
Del.quantity cm³/: 68,5...71,5
1000H.: (67,0...73,0)
6th speed 1/min: 900
Del.quantity cm³/: 71,5...74,5
1000H.: (70,0...76,0)
7th speed 1/min: 750
Del.quantity cm³/: 75,0...76,0
1000H.: (72,5...78,5)
8th speed 1/min: 500
Del.quantity cm³/: 59,5...67,5
1000H.: (59,8...67,2)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150
Del.quantity cm³/: -
ind. 1000H: 80,0

2nd speed 1/min: 250
Del.quantity cm³/: -
max. 1000H : 80,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 0,8...1,2
SVS max.	mm	: 1,1
XK	mm	: 20,2...22,2
XL	mm	: 10,5...13,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 L4
Edition : 09.11.88
replaces : 14.07.87
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R173-8
Type number : 0 460 426 101

Customer-specific information
Customer : CUMMINS/GB

Engine : 6 BTA-590

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,85
mm: $\pm 0,02(0,06)$

Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Charge press. hPa: 1000

D27

Setting value mm: 1,4...1,8

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 3,2...3,8

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 82,0...83,0
Dispersion cm³/
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 40,0...41,0

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 4,0...8,0
Dispersion cm³/
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300
Charge press. hPa: 1000
Del.quantity cm³/
1000H: 65,0...71,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
TD travel mm: 0,4...1,2
mm: (0,1...1,5)

2nd speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: 1,4...1,8
mm: (0,9...2,3)

3rd speed 1/min: 1050
Charge press. hPa: 1000

TD travel mm: 2,3...3,1
mm: (2,0...3,4)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2,1...2,7
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 3,2...3,8
3rd speed 1/min: 1050
Charge press. hPa: 1000
Supply-pump pressure bar: 4,3...4,9

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow quantity cm³/10s: 41...838
(26...98)
2nd speed 1/min: 1250
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 450
LDA stroke mm: 7,0
Del. quantity cm³/: 67,0...68,0
1000H.: (63,0...72,0)
2nd speed 1/min: 1400
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
3rd speed 1/min: 1370
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)
4th speed 1/min: 1330
Charge press. hPa: 1000
Del. quantity cm³/: 15,0...55,0
1000H.: (15,0...55,0)
5th speed 1/min: 1300
Charge press. hPa: 1000
Del. quantity cm³/: 65,0...71,0
1000H.: (62,0...74,0)
6th speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/: 73,5...76,5
1000H.: (72,0...78,0)
7th speed 1/min: 1050
Charge press. hPa: 1000
Del. quantity cm³/: 78,0...81,0
1000H.: (76,5...82,5)

8th speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/: 82,0...83,0
1000H.: (79,5...85,5)
9th speed 1/min: 700
Charge press. hPa: 450
Del. quantity cm³/: 67,0...68,0
1000H.: (63,0...72,0)
10th speed 1/min: 500
Charge press. hPa: 1000
Del. quantity cm³/: 82,0...90,0
1000H.: -
11th speed 1/min: 500
Del. quantity cm³/: 40,0...41,0
1000H.: (36,0...45,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1250
Del. quantity cm³/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 4,0...8,0
1000H.: (1,0...11,0)
2nd speed 1/min: 500
Del. quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm³/: -
ind. 1000H: 60,0
2nd speed 1/min: 370
Del. quantity cm³/: -
max. 1000H : 60,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,0...5,4
MS mm : 1,2...1,6
SVS max. mm : 2,5
XK mm : 18,8...20,8
XL mm : 12,9...16,3

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7,2 M
Edition : 09.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1350 R291
Type number : 0 460 426 104
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 GF

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,35
(from BDC) : ±0,02(0,04)

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000

E01

Setting value mm: 3,1...3,5

Supply-pump pressure:

Speed 1/min: 1000
Setting value bar: 5,7...6,3

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 95,5...96,5
Dispersion cm3/ : 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm3/
1000H.: 19,0...25,0

Full-load speed regulation:

Speed 1/min: 1400
Del.quantity cm3/
1000H.: 77,0...83,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,0...1,8
mm: (0,7...2,1)
2nd speed 1/min: 1000
TD travel mm: 3,1...3,5
mm: (2,6...4,0)
3rd speed 1/min: 1100
TD travel mm: 3,9...4,7
mm: (3,6...5,0)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,9...4,5
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5,7...6,3
3rd speed 1/min: 1350
Supply-pump
pressure bar: 7,4...8,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1350
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1600
Del.quantity cm³/: 0,0...2,0
1000H.: (0,0...2,0)
2nd speed 1/min: 1530
Del.quantity cm³/: 0,0...20,0
1000H.: -
3rd speed 1/min: 1480
Del.quantity cm³/: 20,0...0,0
1000H.: -
4th speed 1/min: 1400
Del.quantity cm³/: 77,0...83,0
1000H.: (75,0...85,0)
5th speed 1/min: 1350
Del.quantity cm³/: 90,5...93,5
1000H.: (89,0...95,0)
6th speed 1/min: 1000
Del.quantity cm³/: 95,5...96,5
1000H.: (93,0...99,0)
7th speed 1/min: 800
Del.quantity cm³/: 95,0...99,0
1000H.: (93,3...100,7)
8th speed 1/min: 600
Del.quantity cm³/: 90,0...94,0
1000H.: (88,3...95,7)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 300
ELAB volt: -
Del.quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300
Del.quantity cm³/: 19,0...25,0
1000H.: (17,0...27,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250

Del.quantity cm³/: -
ind. 1000H: 90,0

2nd speed 1/min: 450
Del.quantity cm³/: -
max. 1000H: 90,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : -
KF mm : 5,1...5,5
MS mm : 0,8...1,2
SVS max. mm : 4,2

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U11
Edition : 09.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R296
Type number : 0 460 426 105

Customer-specific information
Customer : CDC

Engine : 6 BT- 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm: 1,5
mm: $\pm 0,02(0,06)$

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750
Charge press. hPa: 1000

Setting value mm: 3,1...3,5

Supply-pump pressure:

Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 4,1...4,7

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 83,0...84,0
Dispersion cm³ / : 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 30,5...31,5

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm³/
1000H.: 4,0...10,0
Dispersion cm³ / : 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1170
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 50,0...56,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 65,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 5,1...5,9
mm: (4,8...6,2)
2nd speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: 3,1...3,5
mm: (2,6...4,0)
3rd speed 1/min: 500
Charge press. hPa: 1000

TD travel mm: 1,0...1,8
mm: (0,7...2,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,0...3,6
2nd speed 1/min: 750
Charge press. hPa: 1000
Supply-pump pressure bar: 4,1...4,7
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 5,7...6,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
3rd speed 1/min: 1100
Charge press. hPa: 1000
Overflow quantity cm³/10s: (26...98)
4th speed 1/min: 1100
Charge press. hPa: 1000
Overflow quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 450
Del.quantity cm³/: 69,5...70,5
1000H.: (66,0...74,0)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
3rd speed 1/min: 1250
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)
4th speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm³/: 15,0...55,0
1000H.: (15,0...55,0)
5th speed 1/min: 1170
Charge press. hPa: 1000
Del.quantity cm³/: 50,0...56,0
1000H.: (47,0...59,0)
6th speed 1/min: 1100
Charge press. hPa: 1000
Del.quantity cm³/: 67,0...70,0
1000H.: (65,5...71,5)
7th speed 1/min: 900
Charge press. hPa: 1000
Del.quantity cm³/: 72,0...75,0
1000H.: (70,0...77,0)

8th speed 1/min: 750
Charge press. hPa: 1000
Del.quantity cm³/: 83,0...84,0
1000H.: (80,5...86,5)
9th speed 1/min: 700
Charge press. hPa: 450
Del.quantity cm³/: 69,5...70,5
1000H.: (66,0...74,0)
10th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm³/: 86,0...94,0
1000H.: -
11th speed 1/min: 500
Charge press. hPa: -
Del.quantity cm³/: 30,5...31,5
1000H.: (27,0...35,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
Del.quantity cm³/: 4,0...10,0
1000H.: (2,0...12,0)
2nd speed 1/min: 500
Del.quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 280
Del.quantity cm³/: -
ind. 1000H: 55,0
2nd speed 1/min: 380
Del.quantity cm³/: -
max. 1000H : 55,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,0...5,4
MS	mm	: 1,3...1,7
SVS max.	mm	: 2,1
XK	mm	: 18,8...20,8
XL	mm	: 10,4...13,8

Remarks:

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U12
Edition : 09.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R296-1
Type number : 0 460 426 106
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 5 BTA- 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): $\pm 0,02(0,04)$

Start of delivery block
Piston stroke mm : 1,85
mm : $\pm 0,02(0,06)$

Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

E06

Speed 1/min: 900
Charge press. hPa: 1000
Setting value mm: 1,0...1,4

Supply-pump pressure:

Speed 1/min: 900
Charge press. hPa: 1000
Setting value bar: 4,1...4,7

Full-load del. with charge press.:

Speed 1/min: 750
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 91,5...92,5
Dispersion cm³/
1000H : 4,0
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm³/
1000H.: 43,5...44,5

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 15,0...21,0

Full-load speed regulation:

Speed 1/min: 1160
Charge press. hPa: 1000
Del.quantity cm³/
1000H: 61,0...67,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 65,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: 0,1...0,9
mm: (0,0...1,2)

2nd speed 1/min: 900
Charge press. hPa: 1000
TD travel mm: 1,0...1,4
mm: (0,5...1,9)

3rd speed 1/min: 1100
Charge press. hPa: 1000

TD travel mm: 1,7...2,5
mm: (1,4...2,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 2,4...3,0
2nd speed 1/min: 900
Charge press. hPa: 1000
Supply-pump pressure bar: 4,1...4,7
bar: (3,9...4,9)
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 5,0...5,6

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1100
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 550
LDA stroke mm: 7,5
Del. quantity cm³/: 76,5...77,5
1000H.: (73,0...81,0)
2nd speed 1/min: 1270
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
3rd speed 1/min: 1230
Charge press. hPa: 1000
Del. quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)
4th speed 1/min: 1180
Charge press. hPa: 1000
Del. quantity cm³/: 15,0...55,0
1000H.: (15,0...55,0)
5th speed 1/min: 1160
Charge press. hPa: 1000
Del. quantity cm³/: 61,0...67,0
1000H.: (58,0...70,0)
6th speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm³/: 75,0...78,0
1000H.: (73,5...79,5)
7th speed 1/min: 900
Charge press. hPa: 1000

Del. quantity cm³/: 82,5...85,5
1000H.: (80,5...87,5)
8th speed 1/min: 750
Charge press. hPa: 1000
Del. quantity cm³/: 91,5...92,5
1000H.: (89,0...95,0)
9th speed 1/min: 700
Charge press. hPa: 550
Del. quantity cm³/: 76,5...77,5
1000H.: (73,0...81,0)
10th speed 1/min: 500
Charge press. hPa: 1000
Del. quantity cm³/: 94,0...102,0
1000H.: -
11th speed 1/min: 500
Charge press. hPa: -
Del. quantity cm³/: 43,5...44,5
1000H.: (40,0...48,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del. quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del. quantity cm³/: 15,0...21,0
1000H.: (13,0...23,0)
2nd speed 1/min: 500
Del. quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 250
Del. quantity cm³/: -
ind. 1000H: 55,0
2nd speed 1/min: 350
Del. quantity cm³/: -
max. 1000H : 55,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: 5,1...5,5
MS	mm	: 1,2...1,6
SVS max.	mm	: 3,0
XK	mm	: 18,8...20,8
XL	mm	: 10,4...13,8

Remarks:

:

Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7,2 M1
Edition : 09.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1350 R291-1
Type number : 0 460 426 107

Customer-specific information
Customer : MAN

Engine : D 0826 GF

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,35
(from BDC): ±0,02(0,04)

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Setting value mm: 3,2...3,6

Supply-pump pressure:

Speed 1/min: 1000
Setting value bar: 5,7...6,3

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm³/
1000H.: 92,5...93,5
Dispersion cm³/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm³/
1000H.: 13,0...19,0
Dispersion cm³/: 3,5
1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1440
Del.quantity cm³/
1000H.: 62,0...68,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Load-dependent start of delivery:

Speed 1/min: 1000

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,0...1,8
mm: (0,7...2,1)
2nd speed 1/min: 1000
TD travel mm: 3,2...3,6
mm: (2,7...4,1)
3rd speed 1/min: 1100
TD travel mm: 4,1...4,9
mm: (3,8...5,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,9...4,5
2nd speed 1/min: 1000

Supply-pump
pressure bar: 5,7...6,3
3rd speed 1/min: 1100
Supply-pump
pressure bar: 7,4...8,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1350
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1600
Del.quantity cm³/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1540
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1490
Del.quantity cm³/: 15,0...0,0
1000H.: -
4th speed 1/min: 1440
Del.quantity cm³/: 62,0...68,0
1000H.: (60,0...70,0)
5th speed 1/min: 1350
Del.quantity cm³/: 91,0...94,0
1000H.: (89,5...95,5)
6th speed 1/min: 1000
Del.quantity cm³/: 92,5...93,5
1000H.: (90,0...96,0)
7th speed 1/min: 800
Del.quantity cm³/: 89,5...93,5
1000H.: (87,8...95,2)
8th speed 1/min: 600
Del.quantity cm³/: 83,0...87,0
1000H.: (81,3...88,7)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 300
ELAB volt: -
Del.quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300
Del.quantity cm³/: 13,0...19,0
1000H.: (11,0...21,0)
2nd speed 1/min: 450
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250
Del.quantity cm³/: -
ind. 1000H.: 90,0

2nd speed 1/min: 450
Del.quantity cm³/: -
max. 1000H.: 90,0

Shutoff electromagnet:

Cut-in
min. voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,1...5,5
MS mm : 0,8...1,2
SVS max. mm : 4,2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7,2 M2
Edition : 09.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 6/12F1300 R307
Type number : D 460 426 112
Customer-specific information
Customer : MAN
Engine : D 0826TF

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50
Inlet press., bar : 0,35
Calibrating nozzle-holder
assembly : 1 688 901 020
Opening
pressure bar : 172...175
Perforated-plate
diameter mm : 0.6
Test inj. tubing : 1 680 750 017
Outside diameter : 6
x Wall thickness : 2
x Length mm : 840
Start of delivery
Prestroke mm : 0,2
(from BDC): ±0,02(0,04)

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2,8...3,2

Supply-pump pressure:

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value bar: 7,4...8,0

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 124,0...125,0
Dispersion cm³ : 4,0
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del.quantity cm³/
1000H.: 110,5...111,5

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm³/
1000H.: 26,5...33,5
Dispersion cm³ : 3,5
1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1370
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 89,0...95,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 70,0

Load-dependent start of delivery:

Speed 1/min: 1000

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
Charge press. hPa: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 1000
Charge press. hPa: 1000

TD travel mm: 2,8...3,2
mm: (2,3...3,7)
3rd speed 1/min: 1100
Charge press. hPa: 1000
TD travel mm: 3,5...4,3
mm: (3,2...4,6)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 5,2...5,8
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 7,4...8,0
3rd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump pressure bar: 7,8...8,4

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1300
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1520
Charge-air pressure-setting point hPa: 1000
Del.quantity cm³/: 0,0...2,0
1000H.: -
2nd speed 1/min: 1480
Charge press. hPa: 1000
Del.quantity cm³/: 0,0...15,0
1000H.: -
3rd speed 1/min: 1430
Charge press. hPa: 1000
Del.quantity cm³/: 15,0...0,0
1000H.: -
4th speed 1/min: 1370
Charge press. hPa: 1000
Del.quantity cm³/: 89,0...95,0
1000H.: (87,0...97,0)
5th speed 1/min: 1300
Charge press. hPa: 1000
Del.quantity cm³/: 119,5...124,5
1000H.: (119,0...125,0)
6th speed 1/min: 1000
Charge press. hPa: 1000
Del.quantity cm³/: 124,0...125,0
1000H.: (121,5...127,5)
7th speed 1/min: 800

Charge press. hPa: 1000
Del.quantity cm³/: 122,0...127,0
1000H.: (120,8...128,2)
8th speed 1/min: 600
Charge press. hPa: 1000
Del.quantity cm³/: 123,0...132,0
1000H.: (123,8...131,2)
9th speed 1/min: 600
Charge press. hPa: 300
Del.quantity cm³/: 110,5...111,5
1000H.: (108,0...114,0)
10th speed 1/min: 600
Charge press. hPa: -
Del.quantity cm³/: 94,5...95,5
1000H.: (92,0...98,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 300
ELAB volt: -
Del.quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300
Del.quantity cm³/: 26,5...33,5
1000H.: (25,0...35,0)
2nd speed 1/min: 3503
Del.quantity cm³/: 3,0...12,0
1000H.: (2,5...12,5)
3rd speed 1/min: 400
Del.quantity cm³/: 0,0...4,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm³/: -
ind. 1000H: 95,0
2nd speed 1/min: 450
Del.quantity cm³/: -
max. 1000H : 95,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : -
MS mm : 0,6...1,0
SVS max. mm : 1,2

Remarks:
Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : REN 2,0 P
Edition : 10.11.88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/ 8F2300 R317
Type number : 0 460 484 020

Customer-specific information
Customer : RNUR

Engine : F8Q-A06

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 3,8...4,2
KSB solenoid-operated
valve volt: -

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 4,5...5,1
KSB solenoid-operated
valve volt: -

Full-load del. w/out charge press.:

Speed 1/min : 1250
Del.quantity cm3/
1000H.: 31,5...32,5
KSB solenoid-operated
valve volt: -
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 4,0...8,0
KSB solenoid-operated
valve volt: -
Dispersion cm3/: 2,5
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 500
Del.quantity cm3/
1000H.: 1,0...5,0
KSB-Solenoid-Operated
valve Volt : -

Full-load speed regulation:

Speed 1/min: 2450
Del.quantity cm3/
1000H.: 24,0...30,0
KSB solenoid-operated
valve volt: -

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0
KSB solenoid-operated
valve volt: -

Load-dependent start of delivery:

Speed 1/min: 1250
KSB solenoid-operated
valve volt: -

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 210
TD travel mm: 1,0...3,4
mm: (1,0...3,4)

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 310
TD travel mm: 2,2...4,6
mm: (2,2...4,6)

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 750
TD travel mm: 1,6...2,4
mm: (1,3...2,7)

KSB solenoid-operated
valve volt: -

4th speed 1/min: 1250
TD travel mm: 3,8...4,2
mm: (3,3...4,7)

KSB solenoid-operated
valve volt: -

5th speed 1/min: 2000
TD travel mm: 6,6...7,4
mm: (6,3...7,7)

KSB solenoid-operated
valve volt: -

6th speed 1/min: 2250
TD travel mm: 7,6...8,4
mm: (7,3...8,7)

KSB solenoid-operated
valve volt: -

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump pressure bar: 3,1...3,7

KSB solenoid-operated
valve volt: -

2nd speed 1/min: 1250
Supply-pump pressure bar: 4,5...5,1

KSB solenoid-operated
valve volt: -

3rd speed 1/min: 2250
Supply-pump pressure bar: 7,0...7,6

KSB solenoid-operated
valve volt: -

Overflow quantity at overflow valve:

1st speed 1/min: 750
KSB solenoid-operated
valve volt: -
Overflow quantity cm³/10s: 41...83
cm³/10s: (26...98)

2nd speed 1/min: 2250
KSB solenoid-operated
valve volt: -

Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 0,0...5,0
1000H.: (0,0...5,0)

2nd speed 1/min: 2650
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 8,0...16,0
1000H.: (7,0...17,0)

3rd speed 1/min: 2450
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 24,0...30,0
1000H.: (23,0...31,0)

4th speed 1/min: 2250
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 31,1...33,1
1000H.: (29,8...34,4)

5th speed 1/min: 2000
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 30,5...32,5
1000H.: (29,2...33,8)

6th speed 1/min: 1625
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 29,9...32,9
1000H.: (29,1...33,7)

7th speed 1/min: 1250
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 31,5...32,5
1000H.: (29,7...34,3)

8th speed 1/min: 700
KSB solenoid-operated
valve volt: -
Del.quantity cm³/: 30,2...33,2
1000H.: (29,4...34,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400

KSB solenoid-operated
valve volt: -
Del. quantity cm³/: 4,0...8,0
1000H.: (2,0...10,0)

High Idle:

Speed 1/min: 500
Del. quantity cm³/: 7,7...11,7
1000H.: (5,7...13,7)

KSB-Solenoid-operated
valve Volt: -

Automatic starting fuel delivery:

1st speed 1/min: 210
KSB solenoid-operated
valve volt: -
Del. quantity cm³/: -
ind. 1000H: 45,0

2nd speed 1/min: 310
KSB solenoid-operated
valve volt: -
Del. quantity cm³/: -
max. 1000H : 45,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,3...5,7
MS	mm	: 1,1...1,5
SVS max.	mm	: 1,4

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 X7
Edition : 10.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R262
Type number : 0 460 494 206
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 086T-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Charge press. hPa: 750
Setting value mm: 2,9...3,3

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 4,2...4,8

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del.quantity cm³/
1000H.: 43,5...44,5
Dispersion cm³/
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del.quantity cm³/
1000H.: 23,5...24,5

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm³/
1000H.: 11,0...13,0
Dispersion cm³/
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 800
Del.quantity cm³/
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2525
Charge press. hPa: 750
Del.quantity cm³/
1000H.: 14,0...18,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 750
TD travel mm: 1,8...2,6
mm: (1,5...2,9)

2nd speed 1/min: 1250
Charge press. hPa: 750
TD travel mm: 2,9...3,3
mm: (2,4...3,8)

3rd speed 1/min: 1800

Charge press. hPa: 750
TD travel mm: 4,9...5,7
mm: (4,6...6,0)
4th speed 1/min: 2250
Charge press. hPa: 750
TD travel mm: 6,1...6,9
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump pressure bar: 2,3...2,9
2nd speed 1/min: 1250
Charge press. hPa: 750
Supply-pump pressure bar: 4,2...4,8
3rd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2250
Charge press. hPa: 750
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000
Charge-air pressure-setting point hPa: 300
LDA stroke mm: 6,8
Del.quantity cm³/: 33,5...34,5
1000H.: (31,0...37,0)
2nd speed 1/min: 2700
Charge press. hPa: 750
Del.quantity cm³/: 0,0...6,0
1000H.: (0,0...6,0)
3rd speed 1/min: 2525
Charge press. hPa: 750
Del.quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
4th speed 1/min: 2425
Charge press. hPa: 750
Del.quantity cm³/: 23,0...33,0
1000H.: (22,0...34,0)
5th speed 1/min: 2250
Charge press. hPa: 750
Del.quantity cm³/: 38,0...40,0
1000H.: (36,8...41,2)
6th speed 1/min: 1500
Charge press. hPa: 750

Del.quantity cm³/: 43,5...44,5
1000H.: (41,8...46,2)
7th speed 1/min: 1000
Charge press. hPa: 300
Del.quantity cm³/: 33,5...34,5
1000H.: (31,0...37,0)
8th speed 1/min: 600
Charge press. hPa: 750
Del.quantity cm³/: 32,0...35,0
1000H.: (30,5...36,5)
9th speed 1/min: 600
Charge press. hPa: -
Del.quantity cm³/: 23,5...24,5
1000H.: (21,0...27,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 11,0...13,0
1000H.: (8,0...16,0)
2nd speed 1/min: 425
Del.quantity cm³/: 5,5...8,5
1000H.: (3,0...11,0)

High Idle:

Speed 1/min: 525
Del.quantity cm³/: 7,0...9,0
1000H.: (4,0...12,0)

Residual:

Speed 1/min: 800
Del.quantity : 2,5...3,5
1000H.: (1,0...5,0)

Automatic starting fuel delivery:

1st speed 1/min: 100
Del.quantity cm³/: -
ind. 1000H: 35,0

2nd speed 1/min: 270
Del.quantity cm³/: -
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,1...1,5

Remarks:

:
Correction at adjusting nut (46)



BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 X9
Edition : 10.11..88
replaces : -
Calibrating oil : ISO 4113
Injection pump : VE 4/ 9F2250 R270
Type number : 0 460 494 210

Customer-specific information
Customer : VW

Engine : 086-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 28,5...29,5
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 11,0...13,0
Dispersion cm3/: 2,0
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 550
Del.quantity cm3/
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2475
Del.quantity cm3/
1000H.: 14,0...18,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 0,9...1,7
mm: (0,6...2,0)
2nd speed 1/min: 1250
TD travel mm: 2,0...2,4
mm: (1,5...2,9)
3rd speed 1/min: 2250
TD travel mm: 6,3...7,1
mm: (6,0...7,4)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 2,1...2,7
2nd speed 1/min: 1250
Supply-pump
pressure bar: 4,0...4,6
3rd speed 1/min: 2250

Supply-pump
pressure bar: 6,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2250
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2700
Del.quantity cm³/: 0,0...6,0
1000H.: (0,0...6,0)
2nd speed 1/min: 2475
Del.quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
3rd speed 1/min: 2400
Del.quantity cm³/: 18,0...28,0
1000H.: (17,0...29,0)
4th speed 1/min: 2250
Del.quantity cm³/: 27,5...29,5
1000H.: (26,3...30,7)
5th speed 1/min: 1000
Del.quantity cm³/: 28,5...29,5
1000H.: (26,8...31,2)
6th speed 1/min: 600
Del.quantity cm³/: 22,0...25,0
1000H.: (20,5...26,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 11,0...13,0
1000H.: (8,0...16,0)
2nd speed 1/min: 425
Del.quantity cm³/: 5,5...8,5
1000H.: (3,0...11,0)

High Idle:

Speed 1/min: 525
Del.quantity cm³/: 7,0...9,0
1000H.: (340...12,0)

Residual:

Speed 1/min: 500
Del.quantity : 3,2...5,2
1000H.: (1,7...6,7)

Automatic starting fuel delivery:

1st speed 1/min: 180
Del.quantity cm³/: -
ind. 1000H.: 35,0

2nd speed 1/min: 380
Del.quantity cm³/: -
max. 1000H.: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 1,2...1,6

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 D
Edition : 10.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F1000 R315
Type number : 0 460 494 213

Customer-specific information
Customer : ONAN

Engine : L423D

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 700
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 700

E22

Setting value bar: 2,9...3,5

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 48,5...49,5
Dispersion cm3/: 3,0
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 700
Del.quantity cm3/
1000H.: 22,5...26,5
Dispersion cm3/: 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 1100
Del.quantity cm3/
1000H.: 30,0...34,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 55,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
TD travel mm: 0,6...1,4
mm: (0,3...1,7)
2nd speed 1/min: 700
TD travel mm: 2,3...2,7
mm: (1,8...3,2)
3rd speed 1/min: 1000
TD travel mm: 3,6...4,4
mm: (3,3...4,7)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 1,6...2,2
2nd speed 1/min: 700
Supply-pump
pressure bar: 2,9...3,5
3rd speed 1/min: 1000
Supply-pump
pressure bar: 4,0...4,6

Overflow quantity at overflow valve:

1st speed 1/min: 700
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1000
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1220
Del.quantity cm3/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1150
Del.quantity cm3/: 11,5...18,5
1000H.: (11,0...19,0)
3rd speed 1/min: 1100
Del.quantity cm3/: 30,0...34,0
1000H.: (28,0...36,0)
4th speed 1/min: 1000
Del.quantity cm3/: 48,5...49,5
1000H.: (47,0...51,0)
5th speed 1/min: 700
Del.quantity cm3/: 47,0...50,0
1000H.: (46,5...50,5)

Zero delivery (stop):

Idle delivery:

1st speed 1/min: 700
Del.quantity cm3/: 22,5...26,5
1000H.: (21,0...28,0)
2nd speed 1/min: 800
Del.quantity cm3/: 9,0...15,0
1000H.: -
3rd speed 1/min: 900
Del.quantity cm3/: 0,0...3,0
1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm3/: -
ind. 1000H: 60,0
2nd speed 1/min: 400
Del.quantity cm3/: -
max. 1000H : 50,5

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4

KF mm : 5,6...6,0
MS mm : 0,8...1,2
SVS max. mm : 2,1

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 X12
Edition : 10.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R293
Type number : 0 460 494 221

Customer-specific information
Customer : VW

Engine : 086T-1.6L

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Charge press. hPa: 750
Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1250
Charge press. hPa: 750
Setting value bar: 4,9...5,5

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del.quantity cm³/
1000H.: 42,0...43,0
Dispersion cm³ : 2,5
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 700
Del.quantity cm³/
1000H.: 26,5...27,5

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm³/
1000H.: 9,0...11,0
Dispersion cm³ : 2,5
1000H.: (3,0)
Residual-Delivery Setting
Speed 1/min: 550
Del.quantity cm³/
1000H.: 2,0...3,0

Full-load speed regulation:

Speed 1/min: 2525
Charge press. hPa: 750
Del.quantity cm³/
1000H: 13,0...17,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 750
TD travel mm: 1,7...2,5
mm: (1,4...2,8)
2nd speed 1/min: 1250
Charge press. hPa: 750
TD travel mm: 3,0...3,4
mm: (2,5...3,9)
3rd speed 1/min: 1800
Charge press. hPa: 750

TD travel mm: 5,6...6,4
mm: (5,3...6,7)
4th speed 1/min: 2250
Charge press. hPa: 750
TD travel mm: 7,0...7,8
mm: (6,7...8,1)

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 750
Supply-pump pressure bar: 3,3...3,9
2nd speed 1/min: 1250
Charge press. hPa: 750
Supply-pump pressure bar: 4,9...5,5
3rd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 2250
Charge press. hPa: 750
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900
Charge-air pressure-setting point hPa: 300
LDA stroke mm: 5,5
Del. quantity cm³/1000H.: 32,5...33,5
(30,0...36,0)
2nd speed 1/min: 2650
Charge press. hPa: 750
Del. quantity cm³/1000H.: 0,0...6,0
(0,0...6,0)
3rd speed 1/min: 2525
Charge press. hPa: 750
Del. quantity cm³/1000H.: 13,0...17,0
(11,0...19,0)
4th speed 1/min: 2425
Charge press. hPa: 750
Del. quantity cm³/1000H.: 26,5...36,5
(25,5...37,5)
5th speed 1/min: 2250
Charge press. hPa: 750
Del. quantity cm³/1000H.: 36,3...38,3
(35,1...39,5)
6th speed 1/min: 1500
Charge press. hPa: 750

Del. quantity cm³/1000H.: 42,0...43,0
(40,3...44,7)
7th speed 1/min: 900
Charge press. hPa: 300
Del. quantity cm³/1000H.: 32,5...33,5
(30,0...36,0)
8th speed 1/min: 700
Charge press. hPa: 750
Del. quantity cm³/1000H.: 34,0...37,0
(32,5...38,5)
9th speed 1/min: 700
Charge press. hPa: -
Del. quantity cm³/1000H.: 26,5...27,5
(24,0...30,0)
10th speed 1/min: 600
Charge press. hPa: -
Del. quantity cm³/1000H.: 25,0...30,0
(22,5...32,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del. quantity cm³/1000H.: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del. quantity cm³/1000H.: 9,0...11,0
(4,5...15,5)

High Idle:

Speed 1/min: 525
Del. quantity cm³/1000H.: 9,0...11,0
(5,0...15,0)

Residual:

Speed 1/min: 500
Del. quantity cm³/1000H.: 2,5...4,5
(0,0...7,0)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del. quantity cm³/ind. 1000H.: 35,0

2nd speed 1/min: 350
Del. quantity cm³/max. 1000H.: 37,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : K1
KF mm : -
MS mm : 1,1...1,5

Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Adjust damper rate:

Engine speed $n = 1000 \text{ min}^{-1}$
Fuel delivery = 11.0...13.0 cm³ /
1000 strokes
(8.0...16.0) cm³ /
1000 strokes

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 X8
Edition : 10.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R322
Type number : 0 460 494 237

Customer-specific information
Customer : VW

Engine : 086-1.61

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value bar: 5,6...6,2

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del.quantity cm³/
1000H.: 42,0...43,0
Dispersion cm³/
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del.quantity cm³/
1000H.: 26,5...27,5

Low-idle speed regulation:

Speed 1/min: 425
Charge press. hPa: -
Del.quantity cm³/
1000H.: 9,0...11,0
Dispersion cm³/
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 550
Del.quantity cm³/
1000H.: 2,0...3,0

Full-load speed regulation:

Speed 1/min: 2525
Charge press. hPa: 750
Del.quantity cm³/
1000H.: 13,0...17,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 35,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 750
TD travel mm: 1,8...2,6
mm: (1,5...2,9)
2nd speed 1/min: 1500
Charge press. hPa: 750
TD travel mm: 3,8...4,2
mm: (3,3...4,7)
3rd speed 1/min: 1800
Charge press. hPa: 750
TD travel mm: 4,8...5,6
mm: (4,5...5,9)
4th speed 1/min: 2250

Charge press. hPa: 750
TD travel mm: 6,1...6,9
mm: (5,9...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 750
Supply-pump pressure bar: 3,3...3,9
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump pressure bar: 5,6...6,2
3rd speed 1/min: 2250
Charge press. hPa: 750
Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: -
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 2250
Charge press. hPa: 750
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900
Charge-air pressure-setting point hPa: 300
LDA stroke mm: 5,5
Del. quantity cm³/: 32,5...33,5
1000H.: (30,0...36,0)
2nd speed 1/min: 2650
Charge press. hPa: 750
Del. quantity cm³/: 0,0...6,0
1000H.: (0,0...6,0)
3rd speed 1/min: 2525
Charge press. hPa: 750
Del. quantity cm³/: 13,0...17,0
1000H.: (11,0...19,0)
4th speed 1/min: 2450
Charge press. hPa: 750
Del. quantity cm³/: 26,5...36,5
1000H.: (25,5...37,5)
5th speed 1/min: 2250
Charge press. hPa: 750
Del. quantity cm³/: 36,3...38,3
1000H.: (35,1...39,5)
6th speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm³/: 42,0...43,0
1000H.: (40,3...44,7)
7th speed 1/min: 900
Charge press. hPa: 300

Del. quantity cm³/: 32,5...33,5
1000H.: (30,0...36,0)
8th speed 1/min: 700
Charge press. hPa: 750
Del. quantity cm³/: 34,0...37,0
1000H.: (32,5...38,5)
9th speed 1/min: 700
Charge press. hPa: -
Del. quantity cm³/: 26,5...27,5
1000H.: (24,0...30,0)
10th speed 1/min: 600
Charge press. hPa: -
Del. quantity cm³/: 25,0...30,0
1000H.: (22,5...32,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425
Del. quantity cm³/: 9,0...11,0
1000H.: (4,5...15,5)

High Idle:

Speed 1/min: 525
Del. quantity cm³/: 9,0...11,0
1000H.: (5,0...15,0)

Residual:

Speed 1/min: 500
Del. quantity : 2,5...4,5
1000H.: (0,0...7,0)

Automatic starting fuel delivery:

1st speed 1/min: 150
Del. quantity cm³/: -
ind. 1000H.: 35,0

2nd speed 1/min: 350
Del. quantity cm³/: -
max. 1000H.: 37,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: K1
KF	mm	: -
MS	mm	: 1,1...1,5
SVS max.	mm	: 3,1

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

Adjust damper rate:

Engine speed n =	1000 min ⁻¹
Fuel delivery =	11.0...13.0 cm ³ / 1000 strokes
	(8.0...16.0) cm ³ / 1000 strokes

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,5 A
Compl. date: : 11.02.88
Edition : 18.11.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 8F2600 R284
Type number : 9 460 620 001
Customer Part-No. :
Customer Part-No. :

Customer-specific information
Customer : ISUZU

Engine : 1,5 L 4EC1

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250
Setting value mm: 3,0...3,4

Supply-pump pressure:

Speed 1/min: 1250
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del.quantity cm³/
1000H.: 33,0...34,0
Dispersion cm³/
1000H.: 2,5

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm³/
1000H.: 7,5...11,5
Dispersion cm³/
1000H.: 2,5

Full-load speed regulation:

Speed 1/min: 2800
Del.quantity cm³/
1000H.: 13,0...19,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 45,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 0,6...1,4
mm: (0,3...1,7)
2nd speed 1/min: 1250
TD travel mm: 3,0...3,4
mm: (2,5...3,9)
3rd speed 1/min: 1500
TD travel mm: 4,1...4,7
mm: (3,7...5,1)
4th speed 1/min: 2000
TD travel mm: 6,1...6,9
mm: (5,8...7,2)
5th speed 1/min: 2300
TD travel mm: 7,0...7,8
mm: (6,7...8,1)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 2,0...2,6

2nd speed 1/min: 1250
Supply-pump pressure bar: 3,5...4,1
3rd speed 1/min: 2000
Supply-pump pressure bar: 5,3...5,9
4th speed 1/min: 2300
Supply-pump pressure bar: 6,0...6,6

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow quantity : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2600
Overflow quantity : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2975
Del. quantity cm³: 0,0...6,0
1000H.: -
2nd speed 1/min: 2850
Del. quantity cm³: 13,0...19,0
1000H.: (12,0...20,0)
3rd speed 1/min: 2600
Del. quantity cm³: 28,7...31,7
1000H.: (27,9...32,5)
4th speed 1/min: 2400
Del. quantity cm³: 28,7...31,7
1000H.: (28,0...32,4)
5th speed 1/min: 2000
Del. quantity cm³: 30,0...33,0
1000H.: (29,5...33,5)
6th speed 1/min: 1500
Del. quantity cm³: 33,0...34,0
1000H.: (31,2...35,8)
7th speed 1/min: 1000
Del. quantity cm³: 30,7...33,7
1000H.: (30,2...34,2)
8th speed 1/min: 600
Del. quantity cm³: 30,4...33,4
1000H.: (28,9...34,9)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del. quantity cm³: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400

Del. quantity cm³: 7,5...11,5
1000H.: (5,5...13,5)
2nd speed 1/min: 500
Del. quantity cm³: 1,0...6,0
1000H.: (0,0...7,0)
3rd speed 1/min: 700
Del. quantity cm³: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm³: -
ind. 1000H.: 23,0
2nd speed 1/min: 500
Del. quantity cm³: -
max. 1000H.: 36,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...5,8
MS mm : 1,6...2,0
SVS max. mm : 3,6

Remarks:

APPLICATION
Opel - Corsa

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 29
Edition : 16.12.88
Replaces : 5.10.88
Test oil : ISO-4113
Combination no. : 0 400 463 154
Injection pump
Pump designation : PES3A80D410/3RS1350
EP type number : 0 410 483 023
Governor
Governor design. : RSV325...1175A8C2223
Governor no. : 0 420 232 482

Customer-spec. information
Customer : KHD

Engine : F3L912

1st version kW : 33.0
Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

F04

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 2

Phasing : 0-120-240
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800
Rack travel in mm : 10.20...10.50
Del.quantity cm3/ : 4.8...4.9
100 s: (4.6...5.0)
Spread cm3 : 0.2
100 s: (0.4)

2nd speed rpm : 325.0
Rack travel in mm : 6.2...6.4
Del.quantity cm3/ : 1.0...1.6
100 s: (0.8...1.7)
Spread cm3 : 0.2
100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Del.quantity : 48.0...49.0
1000 : (46.5...50.5)
Spread cm3 : 2.50
1000 : (4.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 8.10
Speed rpm : 1215...1225
2nd rack travel in: 4.00

Speed rpm : 1240...1270
3rd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1420
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 6.20...7.40
Rack travel in mm : 2.00
Speed rpm : 465...525

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 9.10...9.40
2nd speed rpm : 500
Rack travel in m: 10.60...10.70
3rd speed rpm : 800
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1175
Del.quantity cm3/ : 46.0...50.0
1000 s: (44.0...52.0)
Speed rpm : 800
Del.quantity cm3/ : 33.0...34.0
1000 s: (31.0...36.0)
Spread cm3 : 2.50
1000 s: (4.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.10
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 17.00...17.30

Remarks: : RENAULT

APPLICATION
Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 3,0 e
 Edition : 18.10.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 464 134
 Injection pump
 Pump designation : PES4A80D410/3RS1356
 EP type number : 0 410 484 022
 Governor
 Governor design. : RSV325...1150A8C494-
 3L
 Governor no. : 0 420 232 514

Customer-spec. information
 Customer : KHD

Engine : F3L912

1st version kW : 31.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1-3-2

Phasing : 0-90-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 9.60...9.70

Del. quantity cm³/ : 5.4...5.5

100 s : (5.3...5.7)

Spread cm³ : 0.2

100 s : (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.9...7.1

Del. quantity cm³/ : 1.2...1.8

100 s : (1.0...1.9)

Spread cm³ : 0.2

100 s : (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del. quantity : 54.5...55.5

1000 : (53.0...57.0)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 8.60

Speed rpm : 940...950

2nd rack travel in: 4.00

Speed rpm : 975...1005
3rd rack travel in: 4.00
Speed rpm : 995...1025
4th rack travel in: 1155
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.00
Speed rpm : 425...485

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 9.60...9.70
2nd speed rpm : 500
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 48.0...50.0
1000 s: (46.0...52.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 16.40...16.80

Remarks:

:

APPLICATION

Compressor

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 12,8 a1
 Edition : 16.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 648 085
 Injection pump
 Pump designation : PE8A95D320LS2421
 EP type number : 0 410 698 994
 Governor
 Governor design. : RQ250/1250AB845DR
 Governor no. : 0 420 203 095

Customer-spec. information
 Customer : MAN

Engine : D 2538 MT

1st version kW : 235.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 9.00...12.00

F08

Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 1.8...2.6

100 s: (1.5...2.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700

Del.quantity : 114.5...116.5

1000 : (112.5...118.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.50

Speed rpm : 1290...1305

2nd rack travel in: 4.00

Speed rpm : 1350...1380

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 8.40

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 11.50...11.60

2nd speed rpm : 500

Rack travel in m: 12.00...12.10

3rd speed rpm : 1075

Rack travel in m: 11.70...11.90

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : 200

Rack travel in m: 11.20...11.40

2nd pressure hPa : 240

Rack travel in m: 11.70...11.80

3rd pressure hPa : 700

Rack travel in m: 12.00...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 800

Del.quantity cm3/ : 119.0...121.0

1000 s: (117.0...123.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 97.5...99.5

1000 s: (95.5...101.5)

RACK STOP ADJUSTMENT

F09

Speed rpm : 250

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1290...1305

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 167.0...177.0

1000 s: (164.0...180.0)

Rack travel in mm : 17.80...18.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,7 g
 Edition : 22.12.88
 Replaces : 9.82
 Test oil : ISO-4113
 Combination no. : 0 400 648 118
 Injection pump
 Pump designation : PE8A95D410LS2451
 EP type number : 0 410 698 992
 Governor
 Governor design. : RQV750AB1041L
 Governor no. : 0 420 212 109

Customer-spec. information
 Customer : KHD

Engine : F8L413F

1st version kW : 114.0
 Rated speed : 1500
 2nd version kW : 129.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.00
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 720
 Rack travel in mm : 10.60...10.70
 Del.quantity cm³/ : 9.7...9.9
 100 s : (9.5...10.1)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 6.5...6.7
 Del.quantity cm³/ : 1.3...1.9
 100 s : (1.0...2.1)
 Spread cm³ : 0.3
 100 s : (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 79.5...81.5
 1000 : (77.5...83.5)
 Spread cm³ : 3.00
 1000 : (6.00)

2nd version
 Speed rpm : 700
 Del.quantity cm³/ : 93.5...95.5
 1000 s : (91.5...97.5)
 Spread cm³ : 3.0
 1000 s : (6.0)

RATED SPEED

1st version
 Control lever
 position degrees: 21...29

Testing:
 1st rack travel in: 9.60
 Speed rpm : 753...758
 2nd rack travel in: 4.50

Speed rpm : 775...785

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 753...758

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 116.5...126.5
1000 s: (113.5...129.5)

Remarks:

:

APPLICATION
Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MA: 14,6 a
 Edition : 09.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 648 137
 Injection pump
 Pump designation : PE8A95D320LS2672
 EP type number : 0 410 698 985
 Governor
 Governor design. : RQ250/1150AB1191R
 Governor no. : 0 420 201 638

Customer-spec. information
 Customer : MAN

Engine : D2848 M/MF

1st version kw : 206.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.65)
 Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 250.0

Rack travel in mm : 7.1...7.3

Del.quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 111.5...113.5

1000 : (109.5...115.5)

Spread cm³ : 3.50

1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.90

Speed rpm : 1195...1210

2nd rack travel in: 4.00

Speed rpm : 1245...1275

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 7.2

Testing:

Speed rpm : 100
Minimum rack trave: 8.60
Speed rpm : 250
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00
Speed rpm : 385...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.70...12.10
2nd speed rpm : 600
Rack travel in m: 12.60...12.70
3rd speed rpm : 1005
Rack travel in m: 12.40...12.60
4th speed rpm : 1085
Rack travel in m: 11.90...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 113.0...116.0
1000 s: (110.5...118.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 14,6 a1
 Edition : 22.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 648 138
 Injection pump
 Pump designation : PE8A95D320LS2672
 EP type number : 0 410 698 985
 Governor
 Governor design. : RQV250...1150AB1190R
 Governor no. : 0 420 213 103

Customer-spec. information
 Customer : MAN

Engine : D2848 M/MF

1st version kW : 206.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 250.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 200
 travel mm : 0.50...0.70

2nd speed rpm : 600
 travel mm : 4.30...4.60

3rd speed rpm : 1000
 travel mm : 6.70...6.90

4th speed rpm : 1250
 travel mm : 9.10...9.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 111.5...113.5

1000 : (109.5...115.5)

Spread cm3 : 3.50

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 11.10
Speed rpm : 1195...1210
2nd rack travel in: 4.00
Speed rpm : 1280...1310
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 100
Minimum rack trave: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION
Speed rpm : 280...390

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 500
Rack travel in m: 12.60...12.70
3rd speed rpm : 1055
Rack travel in m: 12.40...12.60
4th speed rpm : 1105
Rack travel in m: 12.10...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1150
Del.quantity cm3/ : 120.0...123.0
1000 s: (117.5...125.5)
Speed rpm : 500
Del.quantity cm3/ : 113.0...116.0
1000 s: (110.5...118.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.40...16.00

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,7 p1
Edition : 11.11.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 0 400 648 140
Injection pump
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
Governor
Governor design. : RQ300/1250AB929L
Governor no. : 0 420 200 053

Customer-spec. information
Customer : KHD

Engine : F8L413F

1st version kW : 169.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-
4- 3

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.30...9.40

Del.quantity cm3/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3

100 s: (-)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 85.5...87.5

1000 : (83.5...89.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 8.30

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1345...1375

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 8.00

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 410...450

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 9.30...9.40

2nd speed rpm : 650

Rack travel in m: 9.70...9.80

3rd speed rpm : 945

Rack travel in m: 9.50...9.70

4th speed rpm : 1020

Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm³/ : 83.0...86.0

1000 s: (80.5...88.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 12,7 p6
 Edition : 30.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 648 142
 Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RQV350...1250AB990-1
 L
 Governor no. : 0 420 212 182

Customer-spec. information
 Customer : KHD

Engine : F8L413F

1st version kW : 174.0
 2nd version kW : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 8- 7- 2- 6- 5-
 4- 3

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1225

Rack travel in mm : 10.00...10.10

Del.quantity cm³/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm³ : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.20...1.30

2nd speed rpm : 600
 travel mm : 3.80...4.00

3rd speed rpm : 900
 travel mm : 5.20...5.50

4th speed rpm : 1315
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1225

Del.quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 61...69

Testing:

1st rack travel in: 9.00

Speed rpm : 1265...1275

2nd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 9...17

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 350

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 370...480

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

1st speed rpm : 1225

Rack travel in m: 10.00...10.10

2nd speed rpm : 500

Rack travel in m: 10.70...10.80

3rd speed rpm : 970

Rack travel in m: 10.50...10.70

4th speed rpm : 1080

Rack travel in m: 10.10...10.30

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/ : 90.5...93.5

1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1265...1275

F19

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 14.70...15.30

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 15,8 c2
Edition : 09.01.89
Replaces : 3.85
Test oil : ISO-4113

Combination no. : 0 400 649 188

Injection pump
Pump designation : PE10A95D610/4LS2452
EP type number : 0 410 699 998
Governor
Governor design. : RQV300...1150AB988DL
Governor no. : 0 420 214 229

Customer-spec. information
Customer : KHD

Engine : F10L413F

1st version kW : 216.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-
5- 8- 7- 2

Phasing : 0-27-72-99-144-171-
216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.20...9.30

Del. quantity cm³/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 0.9...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 84.5...86.5

1000 : (82.5...88.5)

Spread cm³ : 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 8.20

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:

Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Speed rpm : 750
Maximum rack trave: 1.00

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.20...9.30
2nd speed rpm : 1000
Rack travel in m: 9.40...9.60
3rd speed rpm : 700
Rack travel in m: 9.70...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 83.0...86.0
1000 s: (80.5...88.5)
Speed rpm : 400
Del.quantity cm3/ : 75.0...79.0
1000 s: (72.5...81.5)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 13.20...14.20

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 9.0...14.0
1000 s: (6.5...16.5)
Spread cm3 : 3.00
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 6,5 c
 Edition : 22.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 656 161
 Injection pump
 Pump designation : PE6A90D321RS2690
 EP type number : 0 410 696 182
 Governor
 Governor design. : RQV250...1300AB1238R
 Governor no. : 0 420 213 109

Customer-spec. information
 Customer : ENASA

Engine : 94T 3AW 31500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300
 Rack travel in mm : 12.20...12.30
 Del.quantity cm³/ : 9.2...9.3
 100 s: (9.0...9.5)
 Spread cm³ : 0.3
 100 s: (0.4)
 2nd speed rpm : 250.0
 Rack travel in mm : 8.3...8.5
 Del.quantity cm³/ : 1.2...1.8
 100 s: (1.0...2.0)
 Spread cm³ : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.20
 2nd speed rpm : 300
 travel mm : 2.30...2.70
 3rd speed rpm : 1340
 travel mm : 8.60...8.80
 4th speed rpm : 1465
 travel mm : 9.70...10.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1300
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 700
 Del.quantity : 92.5...93.5
 1000 : (90.5...95.5)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 41...49

Testing:

1st rack travel in: 11.20
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 100
Minimum rack travel: 9.80
Speed rpm : 250
Rack travel in mm : 8.30...8.50

CONSTANT REGULATION

Speed rpm : 285...390

TORQUE CONTROL

Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 12.20...12.30
2nd speed rpm : 500
Rack travel in m: 12.40...12.60
3rd speed rpm : 800
Rack travel in m: 12.30...12.50
4th speed rpm : 1000
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...10.70
2nd pressure hPa : 490
Rack travel in m: 12.30...12.40
3rd pressure hPa : 300
Rack travel in m: 10.80...11.00

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 89.5...91.5
1000 s: (87.0...94.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 56.0...57.0
1000 s: (54.0...59.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...170.0
1000 s: (157.0...173.0)
Rack travel in mm : 19.50...21.00

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 7,2 b 2
 Edition : 09.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 674 046
 Injection pump
 Pump designation : PE4A95D42ORS2662
 EP type number : 0 410 694 995
 Governor
 Governor design. : RSV350...750AOC2228-2R
 Governor no. : 0 420 233 216

Customer-spec. information
 Customer : HANOMAG

Engine : D943 A1/G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : -

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.70...11.80
 Del. quantity cm³/ : 10.9...11.1
 100 s : (10.7...11.3)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 6.4...6.6
 Del. quantity cm³/ : 1.0...1.6
 100 s : (0.7...1.8)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del. quantity : 109.0...111.0
 1000 : (107.0...113.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 76...84

Testing:
 1st rack travel in: 10.70
 Speed rpm : 740...750
 2nd rack travel in: 4.00
 Speed rpm : 780...810
 4th rack travel in: 940
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 65...73

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 350

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 355...415

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 11.70...11.80

2nd speed rpm : 500

Rack travel in m: 11.70...11.90

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 740...750

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

Cold-start testing of RSV governor according to VDT-I-420/114.

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 6,5 b
 Edition : 09.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 676 140
 Injection pump
 Pump designation : PE6A90D32ORS2413
 EP type number : 0 410 696 177
 Governor
 Governor design. : RSV250...1300A1C751R
 Governor no. : 0 420 233 228

Customer-spec. information
 Customer : ENASA

Engine : 94A 1A0 IB 650

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1180
 Rack travel in mm : 10.60...10.70

Del.quantity cm³/ : 7.4...7.5
 100 s: (7.2...7.7)

Spread cm³ : 0.3
 100 s: (0.4)

2nd speed rpm : 250.0
 Rack travel in mm : 7.9...8.1
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.8...1.8)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1180
 Del.quantity : 74.0...75.0
 1000 : (72.0...77.0)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control Lever
 position degrees: 57...65

Testing:
 1st rack travel in: 9.60
 Speed rpm : 1220...1230
 2nd rack travel in: 4.00
 Speed rpm : 1240...1270
 3rd rack travel in: 4.00
 Speed rpm : 1240...1270
 4th rack travel in: 1405
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.6

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 250

Rack travel in mm : 6.00...6.20

Rack travel in mm : 2.00

Speed rpm : 335...395

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180

Rack travel in m: 10.60...10.70

2nd speed rpm : 300

Rack travel in m: 11.90...12.40

3rd speed rpm : 450

Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 58.0...60.0

1000 s: (55.5...62.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 160.0...170.0

1000 s: (157.0...173.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 n 7
 Edition : 30.09.88
 Replaces : 9.3.87
 Test oil : ISO-4113

Combination no. : 0 400 676 178

Injection pump
 Pump designation : PE6A95D410RS2575
 EP type number : 0 410 696 984
 Governor
 Governor design. : RSV250...750A7C2201L
 Governor no. : 0 420 232 444

Customer-spec. information

Customer : DAF

Engine : DHTD 825

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del. quantity cm³/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.0...6.2

Del. quantity cm³/ : 0.7...1.3

100 s: (0.5...1.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 40...48

Testing:
 1st rack travel in: 12.20

Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 780...795
4th rack travel in: 950
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 250
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 255...315

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 7.0...13.0
1000 s: (5.5...14.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 L1
Edition : 09.01.89
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 676 191
Injection pump
Pump designation : PE6A95D320RS2557-1
EP type number : 0 410 696 980
Governor
Governor design. : RSV350...1100A8C2217
-2R
Governor no. : 0 420 233 221

Customer-spec. information
Customer : HANOMAG

Engine : D964 T/60E

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 000
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test lines : 1 680 750 003
Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 2.15...2.25
: (2.10...2.30)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

G02

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080
Rack travel in mm : 10.10...10.20
Del. quantity cm³/ : 8.5...8.7
100 s : (8.3...8.9)
Spread cm³ : 0.3
100 s : (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.5...6.7
Del. quantity cm³/ : 1.0...1.6
100 s : (0.7...1.8)
Spread cm³ : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1080
Del. quantity : 85.0...87.0
1000 : (83.0...89.0)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 9.10
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1150...1180
3rd rack travel in: 4.00
Speed rpm : 1175...1205

4th rack travel in: 1340
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 10.10...10.20
2nd speed rpm : 500
Rack travel in m: 11.10...11.20
4th speed rpm : 880
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 83.5...86.5
1000 s: (81.0...89.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

Cold-start testing of RSV governor
according to VDT-I-420/114.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 e 1
 Edition : 10.1.89
 Replaces : 12.9.86
 Test oil : ISO-4113

Combination no. : 0 400 834 002

Injection pump
 Pump designation : PES4A85D410/3RS2707
 EP type number : 0 410 884 948
 Governor
 Governor design. : RQV300...1250AB1089-1L
 Governor no. : 0 420 212 185

Customer-spec. information
 Customer : KHD

Engine : BF4L913T

1st version kW : 64.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness x Length mm : 6,00X2,00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

G04

Rack travel in mm : 9.00...12.00
 Firing order : 1-3-4-2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50(0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 6.9...7.0
 100 s : (6.7...7.2)

Spread cm³ : 0.3
 100 s : (0.45)

2nd speed rpm : 300
 Rack travel in mm : 4.90...5.10
 Del.quantity cm³/ : 1.0...1.6
 100 s : (0.8...1.8)

Spread cm³ : 0.25
 100 s : (0.45)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.10

2nd speed rpm : 380
 travel mm : 2.30...2.70

3rd speed rpm : 455
 travel mm : 3.10...3.60

4th speed rpm : 1295
 travel mm : 9.10...9.20

5th speed rpm : 1380
 travel mm : 10.00...10.30

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1250
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del.quantity : 69.5...70.5
 1000 : (67.5...72.5)

Spread cm³ : 3.0
 1000 : (4.5)

RATED SPEED

1st version
Control lever
position degrees: 63...71

Testing:
1st rack travel in: 11.00
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1365...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 6...14

Testing:
Speed rpm : 100
Minimum rack trave: 6.40
Speed rpm : 300
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 355...415

TORQUE CONTROL
Dimension a mm : 0.60
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.00...12.10
2nd speed rpm : 650
Rack travel in m: 12.60...12.70
3rd speed rpm : 915
Rack travel in m: 12.40...12.60
4th speed rpm : 985
Rack travel in m: 12.00...12.30

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 58.5...60.5
1000 s: (56.0...63.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)

Rack travel in mm : 15.30...15.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,4 b3
 Edition : 02.12.88
 Replaces : 12.9.86
 Test oil : ISO-4113

Combination no. : 0 400 836 031

Injection pump
 Pump designation : PES6A95D410LS2639-2
 EP type number : 0 410 896 910
 Governor
 Governor design. : RQ250/1100AB1137-9L
 Governor no. : 0 420 200 091

Customer-spec. information
 Customer : MAN

Engine : D2566MF/200

1st version kW : 162.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.55)
 Rack travel in mm : 9.00...12.00

G06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.30...14.40

Del. quantity cm³/ : 12.8...13.0

100 s: (12.6...13.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.4...7.6

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700

Del. quantity : 128.0...130.0

1000 : (126.0...132.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600

Rack travel in mm : 16.0

Testing:
 1st rack travel in: 11.80
 Speed rpm : 1145...1160

2nd rack travel in: 4.00
 Speed rpm : 1240...1270

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.80...12.90

2nd speed rpm : 600

Rack travel in m: 14.30...14.40

3rd speed rpm : 865

Rack travel in m: 13.80...14.00

4th speed rpm : 940

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 128.0...131.0

1000 s: (125.5...133.5)

Speed rpm : 1100

Del.quantity cm3/ : 120.0...124.0

1000 s: (117.5...126.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 105.0...115.0

1000 s: (102.0...118.0)

Rack travel in mm : 15.30...15.60

Remarks:

: MAN-NR. 2-7729

Set idle stop at 250 min -1 to a control-rod travel of 6.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,4 j1
 Edition : 09.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 836 032
 Injection pump
 Pump designation : PES6A95D410LS2639-2
 EP type number : 0 410 896 910
 Governor
 Governor design. : RQV250...1100AB1177-
 2L
 Governor no. : 0 420 212 174

Customer-spec. information
 Customer : MAN

Engine : D2566MF

1st version kW : 162.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.30...14.40

Del.quantity cm³/ : 12.8...13.0

100 s: (12.6...13.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 200
 travel mm : 0.70...0.90

2nd speed rpm : 800
 travel mm : 5.20...5.50

3rd speed rpm : 1200
 travel mm : 7.90...8.10

4th speed rpm : 1400
 travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 128.0...130.0

1000 : (126.0...132.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1275...1305

4th rack travel in: 14.00

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rpm : 100

Minimum rack travel: 9.00

Speed rpm : 250

Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : 1.45

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.80...12.90

2nd speed rpm : 500

Rack travel in m: 14.30...14.40

3rd speed rpm : 875

Rack travel in m: 13.90...14.10

4th speed rpm : 965

Rack travel in m: 13.10...13.40

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm³/ : 128.0...131.0

1000 s: (125.5...133.5)

Speed rpm : 1100

Del.quantity cm³/ : 120.0...124.0

1000 s: (117.5...126.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 105.0...115.0

1000 s: (102.0...118.0)

Rack travel in mm : 15.30...15.60

Remarks:

: MAN-NR. 2-7731

Set idle stop at 250 min -1 to a

control-rod travel of 7.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 s
 Edition : 27.10.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 836 036
 Injection pump
 Pump designation : PES6A85D410/3RS2761
 EP type number : 0 410 886 895
 Governor
 Governor design. : RQV300...1250AB1188-
 1L
 Governor no. : 0 420 212 205

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kW : 118.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 11.60...11.70
 Del.quantity cm3/ : 8.3...8.4
 100 s: (8.1...8.6)
 Spread cm3 : 0.3
 100 s: (0.5)
 2nd speed rpm : 300.0
 Rack travel in mm : 7.3...7.5
 Del.quantity cm3/ : 0.8...1.4
 100 s: (0.6...1.6)
 Spread cm3 : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.30
 2nd speed rpm : 370
 travel mm : 2.30...2.70
 3rd speed rpm : 485
 travel mm : 2.80...3.40
 4th speed rpm : 1295
 travel mm : 8.50...8.60
 5th speed rpm : 1385
 travel mm : 9.50...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1265
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 700
 Del.quantity : 83.0...84.0
 1000 : (81.0...86.0)
 Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 10.60

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1375...1405

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 11...19

Testing:

Speed rpm : 100

Minimum rack travel: 8.90

Speed rpm : 300

Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 355...465

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 11.60...11.70

2nd speed rpm : 500

Rack travel in m: 12.40...12.50

3rd speed rpm : 750

Rack travel in m: 12.10...12.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 10.90...11.00

Measurement

Speed 1/min : 500

1st pressure hPa : 350

Rack travel in m: 11.30...11.50

3rd pressure hPa : 700

Rack travel in m: 12.40...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 750

Del.quantity cm3/ : 82.5...84.5

1000 s: (80.0...87.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 60.5...61.5

1000 s: (58.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 110.0...120.0

1000 s: (107.0...123.0)

Rack travel in mm : 17.00...17.40

Remarks:

:

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 t
 Edition : 28.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 836 037
 Injection pump
 Pump designation : PES6A85D410/3RS2761
 EP type number : 0 410 886 895
 Governor
 Governor design. : RQ300...1250AB935DL
 Governor no. : 0 420 202 267

Customer-spec. information
 Customer : KHD

Engine : BF6L913T

1st version kW : 96.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00

G12

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 7.0...7.1

100 s: (6.8...7.3)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.6...7.8

Del. quantity cm³/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 750

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 70.5...71.5

1000 : (68.5...73.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 750

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.70

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1355...1385

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 530...570

TORQUE CONTROL

Dimension a mm : 0.45
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 10.70...10.80
2nd speed rpm : 800
Rack travel in m: 11.90...12.10
3rd speed rpm : 910
Rack travel in m: 11.60...11.80
4th speed rpm : 1030
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 66.5...69.5
1000 s: (64.0...72.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 t 1
 Edition : 28.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 836 039
 Injection pump
 Pump designation : PES6A85D410/3RS2761
 EP type number : 0 410 886 895
 Governor
 Governor design. : RQ300/1250AB1070-1L
 Governor no. : 0 420 200 111

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kW : 118.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00

G14

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.3...7.5

Del.quantity cm³/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1000

Rack travel in mm : 17.80...19.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700

Del.quantity : 87.5...88.5

1000 : (85.5...90.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 1000

Rack travel in mm : 18.5

Testing:

1st rack travel in: 11.30

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1370...1400

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 500...540

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.30...12.40
3rd speed rpm : 720
Rack travel in m: 13.10...13.30
4th speed rpm : 870
Rack travel in m: 12.50...12.70

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 11.70...11.90
3rd pressure hPa : 700
Rack travel in m: 12.90...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 88.5...90.5
1000 s: (86.0...93.0)
Speed rpm : 500
Del.quantity cm3/ : 62.0...64.0
1000 s: (60.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 11
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 844 091
Injection pump
Pump designation : PES4A90D410RS2666-2
EP type number : 0 410 894 033
Governor
Governor design. : RQV300...1400AB1065-
12L
Governor no. : 0 420 212 207

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 61.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 5.9...6.0

100 s: (5.7...6.2)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del.quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 59.0...60.0

1000 : (57.0...62.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 9.50

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 20...28

Testing:
Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.50...10.60
2nd speed rpm : 450
Rack travel in m: 11.50...11.60
3rd speed rpm : 850
Rack travel in m: 10.90...11.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 450
Del.quantity cm3/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 850
Del.quantity cm3/ : 47.5...50.5
1000 s: (45.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 n 22
 Edition : 02.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 233
 Injection pump
 Pump designation : PES6A90D410RS2293
 EP type number : 0 410 896 031
 Governor
 Governor design. : RQV300...1425AB781L
 Governor no. : 0 420 212 046

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352

1st version kW : 96.0
 Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm³/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.60...1.00

2nd speed rpm : 640

travel mm : 3.20...3.60

3rd speed rpm : 1035

travel mm : 5.50...5.80

4th speed rpm : 1425

travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever
position degrees: 61...69

Testing:
1st rack travel in: 8.70
Speed rpm : 1455...1465
2nd rack travel in: 4.00
Speed rpm : 1550...1580
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack trave: 9.10
Speed rpm : 300
Rack travel in mm : 7.50...7.70
Speed rpm : 875
Maximum rack trave: 1.00

CONSTANT REGULATION
Speed rpm : 370...520

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.70
Speed rpm : 1455...1465

INTERMEDIATE RATED SPEED

Control lever
position degrees: 58...66
Rack travel in mm : 8.70
Speed rpm : 1305...1320
Rack travel in mm : 4.00
Speed rpm : 1400...1430

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 71.0...81.0
1000 s: (68.0...84.0)
Rack travel in mm : 13.90...14.30

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 n 23
 Edition : 09.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 262
 Injection pump
 Pump designation : PES6A90D410RS2293Z
 EP type number : 0 410 896 037
 Governor
 Governor design. : RQV300...1425AB781L
 Governor no. : 0 420 212 046

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 352A

1st version kW : 124.0
 Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

G20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1375

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 7.4...7.5

100 s: (7.2...7.7)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.6

Del. quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 8.40...8.60

2nd speed rpm : 950

travel mm : 5.20...5.50

3rd speed rpm : 775

travel mm : 4.10...4.60

4th speed rpm : 550

travel mm : 2.70...3.00

5th speed rpm : 300

travel mm : 0.70...2.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1375

Del. quantity : 74.0...75.0

1000 : (72.0...77.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 10.00
Speed rpm : 1435...1445
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack trave: 9.10
Speed rpm : 300
Rack travel in mm : 7.40...7.60

CONSTANT REGULATION
Speed rpm : 350...600

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1435...1445

INTERMEDIATE RATED SPEED

Control lever
position degrees: 58...66
Rack travel in mm : 10.00
Speed rpm : 1305...1320
Rack travel in mm : 4.00
Speed rpm : 1430...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 71.0...81.0
1000 s: (68.0...84.0)
Rack travel in mm : 13.90...14.30

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 9,7 n
 Edition : 28.11.88
 Replaces : 10.82
 Test oil : ISO-4113

Combination no. : 0 400 846 308

Injection pump
 Pump designation : PES6A95D41ORS2128
 EP type number : 0 410 896 973
 Governor
 Governor design. : RQ200/1100AB860DL
 Governor no. : 0 420 202 248

Customer-spec. information
 Customer : RABA U. DAEWOO

Engine : D2156MTN5

1st version kW : 188.3
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.95...2.05
 : (1.90...2.10)
 Rack travel in mm : 9.00...12.00

G22

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 12.6...12.8
 100 s : (12.4...13.0)

Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 200.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm³/ : 0.9...1.5
 100 s : (0.6...1.7)

Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 700
 Del. quantity : 126.5...128.5
 1000 : (124.5...130.5)

Spread cm³ : 3.00
 1000 : (6.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 11.30
 Speed rpm : 1145...1160
 2nd rack travel in: 4.00
 Speed rpm : 1195...1225

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 200
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 7.40
Speed rpm : 200
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.30...12.40
2nd speed rpm : 600
Rack travel in m: 12.80...12.90
3rd speed rpm : 1015
Rack travel in m: 12.60...12.80
4th speed rpm : 1070
Rack travel in m: 12.30...12.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.30
2nd pressure hPa : 250
Rack travel in m: 12.10...12.20
3rd pressure hPa : 165
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm3/ : 131.0...134.0
1000 s: (129.0...136.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 81.5...85.5
1000 s: (79.5...87.5)

RACK STOP ADJUSTMENT

Speed rpm : 200

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 151.5...161.5
1000 s: (148.5...164.5)
Rack travel in mm : 16.20...16.80

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,1 y
 Edition : 10.01.89
 Replaces : 25.3.88
 Test oil : ISO-4113

Combination no. : 0 400 846 325

Injection pump
 Pump designation : PES6A95D410LS2409
 EP type number : 0 410 896 962
 Governor
 Governor design. : RQ250/1150AB839DL
 Governor no. : 0 420 202 247

Customer-spec. information
 Customer : MAN

Engine : D2556MX/MXF

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.30...1.40
 : (1.25...1.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 11.7...11.9
 100 s: (11.5...12.1)

Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 250.0
 Rack travel in mm : 6.4...6.6
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.8)

Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.40...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 117.5...119.5
 1000 : (115.5...121.5)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 15.9

Testing:
 1st rack travel in: 11.50
 Speed rpm : 1195...1210
 2nd rack travel in: 4.00
 Speed rpm : 1250...1280
 3rd rack travel in: 4.00

LOW IDLE 1

Setting point w/out bumper spring
 Speed rpm : 250
 Rack travel in mm : 6.5

Testing:

Speed rpm : 150
Minimum rack trave: 7.20
Speed rpm : 250
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 320...360

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.50...11.60
2nd speed rpm : 500
Rack travel in m: 11.90...12.00
3rd speed rpm : 925
Rack travel in m: 11.80...11.90
4th speed rpm : 1000
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 116.0...119.0
1000 s: (114.0...121.0)
Speed rpm : 500
Del.quantity cm3/ : <118.5
1000 s: (<120.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1195...1210

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 116.5...126.5
1000 s: (113.5...129.5)
Rack travel in mm : 13.70...14.30

Remarks:

: MAN-NR. 1-7620

Set idle stop at 250 min -1 to a
control-rod travel of 6.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 k 6
Edition : 11.11.88
Replaces : 8.6.88
Test oil : ISO-4113

Combination no. : 0 400 846 432

Injection pump
Pump designation : PES6A95D41ORS2416
EP type number : 0 410 896 961
Governor
Governor design. : RQ750AB1240L
Governor no. : 0 420 200 110

Customer-spec. information
Customer : KHD

Engine : F6L413FR

1st version kw : 122.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x-600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.40...10.50

Del. quantity cm³/ : 10.1...10.3

100 s : (9.9...10.5)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 1.0...1.6

100 s : (0.7...1.8)

Spread cm³ : 0.3

100 s : (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 780...785

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION
Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,4 b2
 Edition : 23.09.88
 Replaces : 26.2.88
 Test oil : ISO-4113

Combination no. : 0 400 846 507

Injection pump
 Pump designation : PES6A95D410LS2639
 EP type number : 0 410 896 925
 Governor
 Governor design. : RQ250...1100AB1137-6
 L
 Govenner no. : 0 420 200 088

Customer-spec. information
 Customer : MAN

Engine : D2566MUH/200

1st version kW : 147.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.70...1.80
 : (1.65...1.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 126.0...128.0

1000 : (124.0...130.0)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.50

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1245...1275

control-rod travel of 6.5 mm

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 385...425
Speed rpm : 450
Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.50...12.60
2nd speed rpm : 600
Rack travel in m: 13.40...13.50
3rd speed rpm : 860
Rack travel in m: 13.10...13.30
4th speed rpm : 910
Rack travel in m: 12.60...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100
Del.quantity cm3/ : 127.0...130.0
1000 s: (124.5...132.5)
Speed rpm : 500
Del.quantity cm3/ : 126.5...130.5
1000 s: (124.5...132.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 95.0...105.0
1000 s: (92.0...108.0)
Rack travel in mm : 13.60...14.00

Remarks:

: MAN-NR. 2-7413

Set idle stop at 250 min -1 to a

HD1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,1p25
 Edition : 23.09.88
 Replaces : 8.6.88
 Test oil : ISO-4113

Combination no. : 0 400 846 510

Injection pump
 Pump designation : PES6A95D410LS2542
 EP type number : 0 410 896 936
 Governor
 Governor design. : RQ250/1100AB1137-9L
 Governor no. : 0 420 200 091

Customer-spec. information
 Customer : MAN

Engine : D2566MUH/200

1st version kW : 147.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.65)

Rack travel in mm : 9.00...12.00

H02

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 10.0...10.3

100 s: (9.8...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.0...103.0

1000 : (98.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.00

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1225...1255

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack trave: 7.90
Speed rpm : 250
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.00...11.10
2nd speed rpm : 600
Rack travel in m: 12.40...12.50
3rd speed rpm : 870
Rack travel in m: 12.00...12.20
4th speed rpm : 955
Rack travel in m: 11.20...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 107.5...111.5
1000 s: (105.0...114.0)
Speed rpm : 700
Del.quantity cm3/ : 108.5...110.5
1000 s: (106.0...113.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 121.5...131.5
1000 s: (118.5...134.5)
Rack travel in mm : 13.00...13.60

Remarks:

: MAN-NR. 2-7415

Set idle stop at 250 min -1 to a
control-rod travel of 6.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,4 j
 Edition : 23.09.88
 Replaces : 11.12.87
 Test oil : ISO-4113
 Combination no. : 0 400 846 528
 Injection pump
 Pump designation : PES6A95D410LS2639-1
 EP type number : 0 410 896 920
 Governor
 Governor design. : RQV250...1100AB1177-
 2L
 Govenner no. : 0 420 212 174

Customer-spec. information
 Customer : MAN

Engine : D2566MF/220

1st version kW : 162.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 13.0...13.2

100 s: (12.8...13.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...7.8

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 200
 travel mm : 0.70...0.90

2nd speed rpm : 800
 travel mm : 5.20...5.50

3rd speed rpm : 1200
 travel mm : 7.90...8.10

4th speed rpm : 1400
 travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 130.0...132.0

1000 : (128.0...134.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1275...1305

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rpm : 100

Minimum rack travel: 9.00

Speed rpm : 250

Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : 1.45

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.80...12.90

2nd speed rpm : 500

Rack travel in m: 14.30...14.40

3rd speed rpm : 875

Rack travel in m: 13.90...14.10

4th speed rpm : 965

Rack travel in m: 13.10...13.40

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del.quantity cm³/ : 122.0...126.0

1000 s: (119.5...128.5)

Speed rpm : 500

Del.quantity cm³/ : 130.0...133.0

1000 s: (127.5...135.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 105.0...115.0

1000 s: (102.0...118.0)

Rack travel in mm : 15.20...15.40

Remarks:

: MAN-NR. 2-7521

Set idle stop at 250 min -1 to a

control-rod travel of 7.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 1
 Edition : 15.12.88
 Replaces : 30.5.88
 Test oil : ISO-4113

Combination no. : 0 400 846 537

Injection pump
 Pump designation : PES6A95D32ORS2693Z
 EP type number : 0 410 896 913
 Governor
 Governor design. : RQ300/1300AB1204R
 Governor no. : 0 420 201 640

Customer-spec. information
 Customer : DAF

Engine : DNS 620

1st version kW : 150.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 7.50...10.50

H06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 820

Rack travel in mm : 16.80...18.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 820

Rack travel in mm : 17.6

Testing:

1st rack travel in: 10.70
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack trave: 7.30
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 0.00...0.10
2nd speed rpm : 850
Rack travel in m: 1.40...1.60
3rd speed rpm : 965
Rack travel in m: 1.00...1.30
4th speed rpm : 1060
Rack travel in m: 0.20...0.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.20...11.40
2nd pressure hPa : 290
Rack travel in m: 12.00...12.10
3rd pressure hPa : 250
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

H07

1st version

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm3/ : 86.0...88.0
1000 s: (83.5...90.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

When adjusting the governor, observe service information on microcard W-400/008.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RAB 9,7 b 1
Edition : 11.11.88
Replaces : 13.5.87
Test oil : ISO-4113

Combination no. : 0 400 846 543

Injection pump
Pump designation : PES6A95D420LS2595
EP type number : 0 410 896 930
Governor
Governor design. : RQ200/1100AB1210R
Governor no. : 0 420 201 643

Customer-spec. information
Customer : RABA

Engine : D2156MT6U

1st version kw : 188.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.05)

Rack travel in mm : 9.00...12.00

H08

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 7.3...7.5

Del.quantity cm³/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 126.5...128.5

1000 : (124.5...130.5)

Spread cm³ : 3.00

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 19.9

Testing:

1st rack travel in: 11.60

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1190...1220

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 200
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack trave: 7.60
Speed rpm : 200
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 320...360
Speed rpm : 450
Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 600
Rack travel in m: 13.80...14.00
3rd speed rpm : 865
Rack travel in m: 13.40...13.70
4th speed rpm : 985
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500
Rack travel in m: 11.10...11.20
2nd pressure hPa : 340
Rack travel in m: 12.80...12.90
3rd pressure hPa : 250
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm3/ : 135.0...138.0
1000 s: (133.0...140.0)
Speed rpm : 500
Del.quantity cm3/ : 82.5...84.5
1000 s: (80.5...86.5)

BREAKAWAY

H09

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 177.0...187.0
1000 s: (174.0...190.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

Set idle stop at 200 min -1 to a
control-rod travel of 6.4 mm

APPLICATION
Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 m
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 566
Injection pump
Pump designation : PES6A95D32ORS2770
EP type number : 0 410 896 905
Governor
Governor design. : RQV350...1300AB1242R
Governor no. : 0 420 213 110

Customer-spec. information
Customer : NAVISTAR

Engine : DT 466

1st version kW : 138.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 110

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 8.3...8.5

100 s: (8.1...8.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del. quantity cm³/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1510

Rack travel in mm : 6.60...9.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 83.5...85.5

1000 : (81.5...87.5)

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 44...52

Testing:

1st rack travel in: 10.70
Speed rpm : 1345...1375
2nd rack travel in: 4.00
Speed rpm : 1470...1480
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 445...505

CONSTANT REGULATION

Speed rpm : 360...460

START CUT-OUT

Speed 1/min : 270 (280)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1345...1375

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del. quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)

H11

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of
delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 d 2
Edition : 27.10.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 567
Injection pump
Pump designation : PES6A90D41ORS2710
EP type number : 0 410 896 082
Governor
Governor design. : RQV300...1400AB1065-16L
Governor no. : 0 420 212 214

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 82.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.10...10.20

Del. quantity cm³/ : 5.3...5.4

100 s: (5.1...5.6)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 53.0...54.0

1000 : (51.0...56.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 9.10

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1530...1560
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26

Testing:

Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

Speed rpm : 500...700

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.10...10.20
2nd speed rpm : 500
Rack travel in m: 11.10...11.20
3rd speed rpm : 900
Rack travel in m: 10.60...10.90
4th speed rpm : 1100
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 39.0...41.0
1000 s: (36.5...43.5)
Speed rpm : 900
Del.quantity cm3/ : 47.0...50.0
1000 s: (44.5...52.5)
Speed rpm : 1400
Del.quantity cm3/ : 61.0...64.0
1000 s: (59.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 s 1
 Edition : 09.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 568
 Injection pump
 Pump designation : PES6A95D41ORS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RQV300...1150AB1211-
 1L
 Governor no. : 0 420 212 217
 Customer-spec. information
 Customer : KHD
 Engine : F6L413FR-ALLG.
 1st version kW : 103.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test Lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 10.10...10.20
 Del.quantity cm³/ : 9.8...10.0
 100 s: (9.6...10.2)
 Spread cm³ : 0.3
 100 s: (0.6)
 2nd speed rpm : 300.0
 Rack travel in mm : 6.4...6.6
 Del.quantity cm³/ : 2.2...2.8
 100 s: (1.9...3.0)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.30
 2nd speed rpm : 325
 travel mm : 1.70...1.80
 3rd speed rpm : 375
 travel mm : 2.50...2.60
 4th speed rpm : 1265
 travel mm : 9.40...9.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 98.0...100.0
 1000 : (96.0...102.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 9.10
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1370
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 17...25

Testing:
Speed rpm : 200
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 310...450

TORQUE CONTROL
Dimension a mm : 0.30
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 10.10...10.20
2nd speed rpm : 650
Rack travel in m: 10.40...10.50
3rd speed rpm : 1005
Rack travel in m: 10.20...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm³/ : 94.0...97.0
1000 s: (91.5...99.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100

H15

Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 14.20...14.60

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 a 6
 Edition : 22.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 571
 Injection pump
 Pump designation : PES6A90D410RS2667
 EP type number : 0 410 896 080
 Governor
 Governor design. : RQV300...1200AB1065-17L
 Governor no. : 0 420 212 219

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 92.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 11.10...11.20
 Del.quantity cm3/ : 5.8...5.9
 100 s: (5.6...6.1)
 Spread cm3 : 0.3
 100 s: (0.5)

2nd speed rpm : 300.0
 Rack travel in mm : 8.9...9.1
 Del.quantity cm3/ : 0.9...1.3
 100 s: (0.7...1.5)
 Spread cm3 : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.30...4.70
 4th speed rpm : 1260
 travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1260
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del.quantity : 58.0...59.0
 1000 : (56.0...61.0)
 Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 10.10
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24

Testing:
Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.10...11.20
2nd speed rpm : 600
Rack travel in m: 12.30...12.40
3rd speed rpm : 900
Rack travel in m: 11.80...12.00
4th speed rpm : 1000
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm³/ : 54.0...56.0
1000 s: (51.5...58.5)
Speed rpm : 900
Del.quantity cm³/ : 56.0...59.0
1000 s: (53.5...61.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1240...1250

H17

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,1 b 2
 Edition : 12.01.89
 Replaces : 11.7.88
 Test oil : ISO-4113

Combination no. : 0 400 863 008

Injection pump
 Pump designation : PES3A90D320/3RS2658
 EP type number : 0 410 893 004
 Governor
 Governor design. : RSV325...1500A2C505-3R
 Governor no. : 0 420 233 229

Customer-spec. information
 Customer : MWM

Engine : D226B-3

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm3/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 9.7...9.9
 Del.quantity cm3/ : 4.6...5.2
 100 s: (4.4...5.4)

Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del.quantity : 89.5...90.5
 1000 : (87.5...92.5)

Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 39...47

Testing:
 1st rack travel in: 10.20
 Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1180...1210
3rd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1375
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 9.3
Speed rpm : 325
Rack travel in mm : 9.70...9.90
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 500
Rack travel in m: 11.20...11.40

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 115.0
1000 s: (112.0)
Rack travel in mm : 16.80...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 3,0 d
 Edition : 28.11.88
 Replaces : 19.8.88
 Test oil : ISO-4113
 Combination no. : 0 400 863 013
 Injection pump
 Pump designation : PES3A90D410/3RS2740
 EP type number : 0 410 893 006
 Governor
 Governor design. : RSV325...1150A0C2219
 L
 Governor no. : 0 420 232 466

Customer-spec. information
 Customer : KHD

Engine : F3L913G

1st version kW : 36.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

H2O

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 9.20...9.30

Del. quantity cm³/ : 5.2...5.3

100 s: (5.0...5.5)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 375.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 1.1...1.7

100 s: (0.9...1.9)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Del. quantity : 52.0...53.0

1000 : (50.0...55.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 8.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1120...1150

3rd rack travel in: 4.00

Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 375
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 650
Rack travel in m: 9.20...9.30
2nd speed rpm : 350
Rack travel in m: 9.30...9.60
3rd speed rpm : 1050
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 350
Del.quantity cm3/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 1050
Del.quantity cm3/ : 63.5...65.5
1000 s: (61.0...68.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 57.0...67.0
1000 s: (54.0...70.0)
Rack travel in mm : 10.70...10.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 38
Edition : 18.10.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 863 015
Injection pump
Pump designation : PES3A85D410/3RS2642
EP type number : 0 410 883 989
Governor
Governor design. : RSV325...1200A2C2102
-3L
Governor no. : 0 420 232 508

Customer-spec. information
Customer : KHD

Engine : F3L913

1st version kW : 44.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.30...10.40

Del.quantity cm³/ : 6.8...6.9

100 s: (6.6...7.1)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.9...8.1

Del.quantity cm³/ : 0.9...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 68.5...69.5

1000 : (66.5...71.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 9.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1275...1305

3rd rack travel in: 4.00

Speed rpm : 1295...1325
4th rack travel in: 1460
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.90...8.10
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 10.70...10.90
4th speed rpm : 875
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 59.0...61.0
1000 s: (56.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...150.0
1000 s: (137.0...153.0)
Rack travel in mm : 19.50...21.00

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 d 4
 Edition : 30.09.88
 Replaces : 12.9.86
 Test oil : ISO-4113

Combination no. : 0 400 864 065

Injection pump
 Pump designation : PES4A85D410/3RS2638
 EP type number : 0 410 884 950
 Governor
 Governor design. : RSV325...1400A8C540-
 2L
 Governor no. : 0 420 232 457

Customer-spec. information
 Customer : KHD

Engine : BF4L913

1st version kW : 35.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del. quantity cm³/ : 7.0...7.1

100 s: (6.8...7.3)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 9.0...9.2

Del. quantity cm³/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 70.0...71.0

1000 : (68.0...73.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 10.60

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1325...1355

3rd rack travel in: 4.00

Speed rpm : 1385...1415
4th rack travel in: 1560
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 8.10...8.30
Rack travel in mm : 2.00
Speed rpm : 640...700

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.60...11.70
2nd speed rpm : 500
Rack travel in m: 12.70...12.80
4th speed rpm : 1000
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del. quantity cm³/ : 66.0...68.0
1000 s: (63.5...70.5)
Speed rpm : 1000
Del. quantity cm³/ : 66.0...68.0
1000 s: (63.5...70.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:

: ATLAS-COPCO

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 4,1 f
 Edition : 04.11.88
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 400 864 073

 Injection pump
 Pump designation : PES4A90D320/3RS2743
 EP type number : 0 410 894 034
 Governor
 Governor design. : RSV325...1075A0C2182
 -5R
 Governor no. : 0 420 233 226

 Customer-spec. information
 Customer : MWM

 Engine : TD226-B4

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve
 : 1 417 413 000

 Inlet press., bar : 1.00

 Test nozzle holder
 assembly : 0 681 343 009

 Opening
 pressure, bar : 172...175

 Test lines : 1 680 750 014

 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

 Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1045

 Rack travel in mm : 11.10...11.20

 Del.quantity cm³/ : 8.7...8.8
 100 s: (8.5...9.0)

 Spread cm³ : 0.3
 100 s: (0.5)

 2nd speed rpm : 325.0
 Rack travel in mm : 6.9...7.1
 Del.quantity cm³/ : 1.0...1.4
 100 s: (0.8...1.6)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1045
 Aneroid pressure h: 700
 Del.quantity : 87.5...88.5
 1000 : (85.5...90.5)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 37...45

Testing:
 1st rack travel in: 10.10

Speed rpm : 1085...1095
2nd rack travel in: 4.00
Speed rpm : 1115...1145
3rd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1280
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1045
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 12.20...12.30
3rd speed rpm : 845
Rack travel in m: 11.60...11.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 240
Rack travel in m: 11.80...11.90
3rd pressure hPa : 150
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 240
Speed rpm : 500
Del.quantity cm³/ : 86.0...89.0
1000 s: (83.5...91.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 64.0...65.0
1000 s: (62.0...67.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.90...7.10
Del.quantity cm³/ : 10.0...14.0
1000 s: (8.0...16.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 a 9
 Edition : 20.05.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 081
 Injection pump
 Pump designation : PES6A85D410/3RS2415
 EP type number : 0 410 886 915
 Governor
 Governor design. : RS325/1325A0C691DL
 Governor no. : 0 420 220 006

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kW : 110.0
 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 8.6...8.7

100 s: (8.4...8.9)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.2...8.4

Del.quantity cm3/ : 1.3...1.9

100 s: (1.1...2.1)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Aneroid pressure h: 700

Del.quantity : 86.5...87.5

1000 : (84.5...89.5)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 64...72

Testing:

1st rack travel in: 11.00

Speed rpm : 1355...1365

2nd rack travel in: 4.00

Speed rpm : 1450...1480

4th rack travel in: 1600

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: ?

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 16.00

Speed rpm : 500

Rack travel in mm : 3.40...4.00

Rack travel in mm : 2.00

Speed rpm : 1350...140

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1325

Rack travel in m: 12.00...12.10

2nd speed rpm : 500

Rack travel in m: 12.00...12.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 373

Rack travel in m: 11.70...11.80

3rd pressure hPa : 266

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 800

Del.quantity cm3/ : 77.5...79.5

1000 s: (75.0...82.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 56.0...58.0

1000 s: (54.0...60.0)

BREAKAWAY

JD1

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1355...1365

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 103.0...113.0

1000 s: (100.0...116.0)

Rack travel in mm : 16.30...16.70

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

The stop position of the control rod must be easily reached with the stop lever

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 a10
 Edition : 09.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 082
 Injection pump
 Pump designation : PES6A85D410/3RS2415
 EP type number : 0 410 886 915
 Governor
 Governor design. : RS325/1325AOC709DL
 Governor no. : 0 420 220 009

Customer-spec. information
 Customer : KHD

Engine : BF6L913

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1325
 Rack travel in mm : 12.00...12.10
 Del. quantity cm³/ : 8.6...8.7
 100 s : (8.4...8.9)
 Spread cm³ : 0.3
 100 s : (0.4)
 2nd speed rpm : 325.0
 Rack travel in mm : 8.2...8.4
 Del. quantity cm³/ : 1.3...1.9
 100 s : (1.1...2.1)
 Spread cm³ : 0.2
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1325
 Aneroid pressure h: 700
 Del. quantity : 86.5...87.5
 1000 : (84.5...89.5)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 64...72

Testing:
 1st rack travel in: 11.00
 Speed rpm : 1355...1365
 2nd rack travel in: 4.00
 Speed rpm : 1450...1480
 4th rack travel in: 1600
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: ?
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.5

Testing:
Speed rpm : 100
Minimum rack trave: 16.00
Speed rpm : 325
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 1350...140

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1325
Rack travel in m: 12.00...12.10
2nd speed rpm : 500
Rack travel in m: 12.00...12.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.80
2nd pressure hPa : 373
Rack travel in m: 11.70...11.80
3rd pressure hPa : 266
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm3/ : 77.5...79.5
1000 s: (75.0...82.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 56.0...58.0
1000 s: (54.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1355...1365

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 103.0...113.0
1000 s: (100.0...116.0)
Rack travel in mm : 16.30...16.70

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

The stop position of the control rod
must be easily reached with the stop
lever

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 5,9 f 4
 Edition : 15.05.87
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 103
 Injection pump
 Pump designation : PES6A90D210RS2629
 EP type number : 0 410 896 075
 Governor
 Governor design. : RSV350...1300A0C2143
 L
 Governor no. : 0 420 232 376

Customer-spec. information
 Customer : FORD/GB

Engine : DOVER 363

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.00
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.70...2.80
 : (2.65...2.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 11.70...11.80
 Del. quantity cm³/ : 5.8...5.9
 100 s: (5.6...6.1)
 Spread cm³ : 0.3
 100 s: (0.4)
 2nd speed rpm : 350.0
 Rack travel in mm : 7.2...7.4
 Del. quantity cm³/ : 0.7...1.3
 100 s: (0.5...1.5)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del. quantity : 58.5...59.5
 1000 : (56.5...61.5)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 65...73

Testing:
 1st rack travel in: 10.70
 Speed rpm : 1370...1380
 2nd rack travel in: 4.00
 Speed rpm : 1470...1500
 3rd rack travel in: 4.00
 Speed rpm : 1495...1520
 4th rack travel in: 1680
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 34...42

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.8

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 7.20...7.40

Rack travel in mm : 2.00

Speed rpm : 580...640

Speed rpm : 700

Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 11.70...11.80

3rd speed rpm : 700

Rack travel in m: 11.90...12.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 76.0...90.0

1000 s: (73.0...93.0)

Rack travel in mm : 19.00...21.00

Remarks:

:

At start of delivery, locating pin
must latch into slit in pointer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 5,9 f 4
 Edition : 27.03.87
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 109
 Injection pump
 Pump designation : PES6A90D210RS2629
 EP type number : 0 410 896 075
 Governor
 Governor design. : RSV350...1300ADC2139
 L
 Governor no. : 0 420 232 374

Customer-spec. information
 Customer : FORD/GB

Engine : 380

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 000
 Inlet press., bar : 1.00
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.70...2.80
 : (2.65...2.85)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 12.90...13.00
 Del. quantity cm³/ : 7.2...7.3
 100 s : (7.0...7.5)
 Spread cm³ : 0.3
 100 s : (0.4)
 2nd speed rpm : 350.0
 Rack travel in mm : 6.4...6.5
 Del. quantity cm³/ : 0.9...1.3
 100 s : (0.7...1.5)
 Spread cm³ : 0.2
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del. quantity : 72.0...73.0
 1000 : (70.0...75.0)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 64...72

Testing:
 1st rack travel in: 11.90
 Speed rpm : 1365...1375
 2nd rack travel in: 4.00
 Speed rpm : 1480...1510
 3rd rack travel in: 4.00
 Speed rpm : 1505...1535
 4th rack travel in: 1670
 Speed rpm : 0.30...1.70

LOW IDLE 1
 Control lever

position degrees: 30...38
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 515...575
Speed rpm : 650
Maximum rack trave: 1.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 76.0...90.0
1000 s: (73.0...93.0)
Rack travel in mm : 19.00...21.00

Remarks:

:

At start of delivery, locating pin
must latch into slit in pointer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r
Edition : 28.11.88
Replaces : 19.8.88
Test oil : ISO-4113

Combination no. : 0 400 866 125

Injection pump
Pump designation : PES6A85D410/3RS2761
EP type number : 0 410 886 895
Governor
Governor design. : RSV325...1150A8C674-
1L
Governor no. : 0 420 232 518

Customer-spec. information
Customer : KHD

Engine : BF6L913

1st version kW : 112.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

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Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 8.4...8.5
100 s: (8.2...8.7)

Spread cm³ : 0.3
100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 7.5...7.7
Del.quantity cm³/ : 0.8...1.4
100 s: (0.6...1.6)

Spread cm³ : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 700
Del.quantity : 84.5...85.5
1000 : (82.5...87.5)

Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 11.10
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1225...1255

3rd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1455
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 600...660

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 750
Rack travel in m: 12.60...12.70
3rd speed rpm : 855
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500
1st pressure hPa : 350
Rack travel in m: 11.90...12.00
3rd pressure hPa : 700
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 64.5...65.5
1000 s: (62.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r 1
 Edition : 28.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 126
 Injection pump
 Pump designation : PES6A85D410/3RS2761
 EP type number : 0 410 886 895
 Governor
 Governor design. : RSV325...1150A8C673-
 2L
 Governor no. : 0 420 232 519

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kW : 112.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del. quantity cm³/ : 0.7...1.3

100 s: (0.5...1.5)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
 position degrees: 48...56

Testing:

1st rack travel in: 11.10

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00

Speed rpm : 1290...1320
4th rack travel in: 1455
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 600...660

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 750
Rack travel in m: 12.60...12.70
3rd speed rpm : 855
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 87.0...89.0
1000 s: (84.5...91.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r 2
 Edition : 28.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 127
 Injection pump
 Pump designation : PES6A85D410/3RS2761
 EP type number : 0 410 886 895
 Governor
 Governor design. : RSV325...1150A8C707-
 5L
 Governor no. : 0 420 232 517

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kW : 112.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 12.10...12.20
 Del. quantity cm³/ : 8.4...8.5
 100 s: (8.2...8.7)
 Spread cm³ : 0.3
 100 s: (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 7.5...7.7
 Del. quantity cm³/ : 0.8...1.4
 100 s: (0.6...1.6)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 700
 Del. quantity : 84.5...85.5
 1000 : (82.5...87.5)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 48...56

Testing:
 1st rack travel in: 11.10
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00
 Speed rpm : 1230...1260

3rd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1455
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 600...660

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.10...12.20
2nd speed rpm : 500
Rack travel in m: 12.60...12.70
3rd speed rpm : 855
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 11.90...12.00
3rd pressure hPa : 700
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 64.5...65.5
1000 s: (62.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 f
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 128
 Injection pump
 Pump designation : PES6A100D320/3RS2763
 EP type number : 0 410 806 006
 Governor
 Governor design. : RSV410...950AOC2190-26R
 Governor no. : 0 420 233 224

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CT

1st version kW : 138.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 017

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...3.00)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 9.60...9.70

Del.quantity cm³/ : 8.4...8.6

100 s : (8.2...8.8)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 410.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 84.5...86.5

1000 : (82.5...88.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 8.60
Speed rpm : 1010...1020
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 24...32
Setting point w/out bumper spring
Speed rpm : 410
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 410
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 455...515

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 9.60...9.70
2nd speed rpm : 650
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 99.0...103.0
1000 s: (97.0...105.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1010...1020

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 410
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
Adjust stop lever to 0.5...1.0 mm
before stop.
Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 f 1
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 129
 Injection pump
 Pump designation : PES6A100D320/3RS2763
 EP type number : 0 410 806 006
 Governor
 Governor design. : RSV400...1050ADC2190
 -27R
 Governor no. : 0 420 233 225

Customer-spec. information
 Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 111.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 46...54

Testing:

1st rack travel in: 9.20
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1235
3rd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 10.20...10.30
2nd speed rpm : 750
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 99.0...103.0
1000 s: (97.0...105.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.30...5.50

Del.quantity cm3/ : 11.5...15.5
1000 s: (9.0...18.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
Adjust stop lever to 0.5...1.0 mm
before stop.
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 g
 Edition : 27.10.88
 Replaces : 5.8.88
 Test oil : ISO-4113
 Combination no. : 0 400 866 130
 Injection pump
 Pump designation : PES6A90D320/3RS2766
 EP type number : 0 410 896 087
 Governor
 Governor design. : RSV325...1075A0C2182
 -6R
 Governor no. : 0 420 233 227

Customer-spec. information
 Customer : MWM

Engine : TD226B-6

1st version kW : 106.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 8.1...8.2

100 s: (7.9...8.4)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 6.9...7.1

Del.quantity cm³/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 700

Del.quantity : 81.5...82.5

1000 : (79.5...84.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 39...47

Testing:

1st rack travel in: 9.90
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1140...1170
3rd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1330
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 12.00...12.10
3rd speed rpm : 890
Rack travel in m: 11.40...11.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 250
Rack travel in m: 11.40...11.50
3rd pressure hPa : 150
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/ : 86.0...88.0
1000 s: (83.5...90.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 62.0...63.0
1000 s: (60.0...65.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 g
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 866 131

Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV425...900A4C2213-2R
 Governor no. : 0 420 233 230

Cust. part no. : 3914869

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 154.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 830

Rack travel in mm : 13.40...13.50

Del.quantity cm³/ : 13.5...13.7

100 s: (13.3...13.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 830

Del.quantity : 135.0...137.0

1000 : (133.0...139.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...48

Testing:

1st rack travel in: 12.40
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 960...990
3rd rack travel in: 4.00
4th rack travel in: 1030
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 435...495

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm
before stop.
Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a15
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 866 134
Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...1100A0C2190
-31R
Governor no. : 0 420 233 233

Customer-spec. information
Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

J22

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 12.2...12.4

100 s: (12.0...12.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.6...5.8

Del. quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 122.5...124.5

1000 : (120.5...126.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.30
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 28...36
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 485...545

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm
before stop.
Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a16
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 135
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV500...1050A0C2190
 -30R
 Governor no. : 0 420 233 234

Customer-spec. information
 Customer : C.D.C.

Engine : 6-CT-I 8.3 ltr

1st version kw : 123.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 9.6...9.8

100 s : (9.4...10.0)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 500.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 96.5...98.5

1000 : (94.5...100.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.70
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 32...40
Setting point w/out bumper spring
Speed rpm : 500
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 500
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.70...10.80
2nd speed rpm : 750
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm3/ : 116.0...120.0
1000 s: (114.0...122.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1095...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 500
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Adjustment without torque-control
spring retainer with 1 mm less
Adjust stop lever to 0.5...1.0 mm
before stop. ivery with torque-control
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r 3
 Edition : 09.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 137
 Injection pump
 Pump designation : PES6A85D410/3RS2761
 EP type number : 0 410 886 895
 Governor
 Governor design. : RSV325...1400A2C2205
 -1L
 Govenner no. : 0 420 232 520

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kW : 118.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 12,30...12.40
 Del.quantity cm³/ : 8.7...8.8
 100 s: (8.5...9.0)
 Spread cm³ : 0.3
 100 s: (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 7.3...7.5
 Del.quantity cm³/ : 0.8...1.4
 100 s: (0.6...1.6)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 700
 Del.quantity : 87.5...88.5
 1000 : (85.5...90.5)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 43...51

Testing:
 1st rack travel in: 11.30
 Speed rpm : 1290...1300
 2nd rack travel in: 4.00
 Speed rpm : 1345...1375

3rd rack travel in: 4.00
Speed rpm : 1395...1425
4th rack travel in: 1560
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 605...665

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.30...12.40
2nd speed rpm : 500
Rack travel in m: 12.80...12.90
3rd speed rpm : 940
Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 11.60...11.70
3rd pressure hPa : 700
Rack travel in m: 12.80...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 88.5...90.5
1000 s: (86.0...93.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 62.5...63.5
1000 s: (60.5...65.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

APPLICATION
Wheel loader

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 g 1
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 138
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV425...750A4C2213-
 3R
 Governor no. : 0 420 233 235

Customer-spec. information
 Customer : C.D.C.

Engine : 6CT- 8.3 L

1st version kW : 135.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 142.5...144.5

1000 : (140.5...146.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 13.00
Speed rpm : 795...805
2nd rack travel in: 4.00
Speed rpm : 825...855
3rd rack travel in: 4.00
Speed rpm : 830...860

LOW IDLE 1
Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.6

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 440...500

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 795...805

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 6.00...6.20
Del.quantity cm³/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1
Adjust stop lever to 0.5...1.0 mm
before stop.

APPLICATION
Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 f 2
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 866 139
Injection pump
Pump designation : PES6A100D320/3RS2763
EP type number : 0 410 806 006
Governor
Governor design. : RSV400...1250A0C2190
-32R
Governor no. : 0 420 233 236

Customer-spec. information

Customer : CDC
Engine : 6 CT 8.3 ltr

1st version kW : 114.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K02

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 9.20...9.30

Del.quantity cm³/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.1...5.3

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 8.20
Speed rpm : 1310...1320
2nd rack travel in: 4.00
Speed rpm : 1345...1375
3rd rack travel in: 4.00
Speed rpm : 1350...1380
4th rack travel in: 1450
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 28...36
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 9.20...9.30
2nd speed rpm : 800
Rack travel in m: 9.60...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 80.5...84.5
1000 s: (78.5...86.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...165.0
1000 s: (140.0...170.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.10...5.30

K03

Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
Adjust stop lever to 0.5...1.0 mm
before stop.
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 3,3 a 1
Edition : 28.11.88
Replaces : 1.86
Test oil : ISO-4113

Combination no. : 0 400 873 032

Injection pump
Pump designation : PES3A95D32ORS2655
EP type number : 0 410 893 999
Governor
Governor design. : RSV325...1150A2C2178
-1R
Governor no. : 0 420 233 177

Customer-spec. information
Customer : VALMET

Engine : 311 DS6

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 2- 3

Phasing : 0-120-240
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 10.40...10.50

Del. quantity cm³/ : 8.8...9.0
100 s: (8.6...9.2)

Spread cm³ : 0.3
100 s: (0.6)

2nd speed rpm : 325.0
Rack travel in mm : 6.5...6.7
Del. quantity cm³/ : 2.2...2.8
100 s: (1.9...3.0)
Spread cm³ : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1130
Del. quantity : 88.5...90.5
1000 : (86.5...92.5)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 47...55

Testing:

1st rack travel in: 9.40
Speed rpm : 1170...1180
2nd rack travel in: 4.00
Speed rpm : 1230...1260
3rd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1405
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 21...29
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1130
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 11.80...11.90
3rd speed rpm : 915
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 94.5...96.5
1000 s: (92.0...99.0)
1000 s: (7.)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...200.0
1000 s: (187.0...203.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

K05

Speed rpm : 325
Rack travel in mm : 6.50...6.70
Del.quantity cm3/ : 22.0...28.0
1000 s: (19.5...30.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 2,7 a
 Edition : 09.12.88
 Replaces : 12.9.86
 Test oil : ISO-4113
 Combination no. : 0 400 873 037
 Injection pump
 Pump designation : PES3A95D32ORS2711
 EP type number : 0 410 893 998
 Governor
 Governor design. : RSV325...1175AOC2178
 -3R
 Governor no. : 0 420 233 206

Customer-spec. information
 Customer : VALMET

Engine : 309 DS4

1st version kW : 45.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1210

Rack travel in mm : 10.20...10.30

Del. quantity cm³/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 1.7...2.5

100 s: (1.4...2.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1210

Del. quantity : 75.5...77.5

1000 : (73.5...79.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 41...49

Testing:

1st rack travel in: 9.20
Speed rpm : 1250...1260
2nd rack travel in: 4.00
Speed rpm : 1325...1355
3rd rack travel in: 4.00
Speed rpm : 1330...1360
4th rack travel in: 1500
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 435...495

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1210
Rack travel in m: 10.20...10.30
2nd speed rpm : 500
Rack travel in m: 11.30...11.40
4th speed rpm : 985
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 66.5...69.5
1000 s: (64.0...72.0)
1000 s: (7.)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1250...1260

STARTING FUEL DELIVERY

Speed rpm : 100

K07

Del.quantity cm3/ : 155.0...165.0
1000 s: (152.0...168.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 17.0...25.0
1000 s: (14.5...27.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

APPLICATION :
Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE 5,6 a
Edition : 09.01.89
Replaces : 28.8.87
Test oil : ISO-4113

Combination no. : 0 400 874 238

Injection pump
Pump designation : PES4A95D410RS2685
EP type number : 0 410 894 996
Governor
Governor design. : RSV400...1000A1C2187
L
Governor no. : 0 420 232 387

Customer-spec. information
Customer : LIEBHERR

Engine : D904 NA

1st version kW : 70.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 40...45

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
: (2.65...2.85)

K08

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.20...10.30

Del. quantity cm³/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 6.3...6.5

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1050...1080
3rd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1230
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 400
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 515...575

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.20...10.30
2nd speed rpm : 500
Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 80.5...83.5
1000 s: (78.0...86.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1040...1050

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 4,4 b
 Edition : 28.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 874 241
 Injection pump
 Pump designation : PES4A95D32ORS2654
 EP type number : 0 410 894 997
 Governor
 Governor design. : RSV325...1200A2C2218
 R
 Governor no. : 0 420 232 463

Customer-spec. information
 Customer : VALMET

Engine : 411 DSJ

1st version kW : 90.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.3...6.5

Del.quantity cm³/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 45...53

Testing:
1st rack travel in: 10.10
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1295...1325
3rd rack travel in: 4.00
Speed rpm : 1305...1335
4th rack travel in: 1470
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.9

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 12.40...12.50
4th speed rpm : 910
Rack travel in m: 11.70...11.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.40...12.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.40...9.50
2nd pressure hPa : 420
Rack travel in m: 11.70...11.80
3rd pressure hPa : 160
Rack travel in m: 10.00...10.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm3/ : 112.5...115.5
1000 s: (110.0...118.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 59.0...62.0
1000 s: (57.0...64.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...200.0
1000 s: (187.0...203.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 18.0...24.0
1000 s: (15.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks: :

APPLICATION
Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 c 1
Edition : 18.10.88
Replaces : 2.9.88
Test oil : ISO-4113

Combination no. : 0 400 874 244

Injection pump
Pump designation : PES4A90D41ORS2666-2
EP type number : 0 410 894 033
Governor
Governor design. : RSV350...1200A2C1139
-3L
Governor no. : 0 420 232 472

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 57.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 5.4...5.5

100 s: (5.2...5.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 8.1...8.9

Del.quantity cm3/ : 1.0...1.2

100 s: (0.8...1.4)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 54.0...55.0

1000 : (52.0...57.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 9.50

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1298...1311

3rd rack travel in: 4.00

Speed rpm : 1331...1361
4th rack travel in: 1450
Speed rpm : 0.30...1.40
5th rack travel in: 1240...1250
Speed rpm : 9.50

Remarks:

LOW IDLE 1

Control Lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.60

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 8.50...8.70
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.50...10.60
2nd speed rpm : 800
Rack travel in m: 12.00...12.10
3rd speed rpm : 950
Rack travel in m: 11.70...11.90
4th speed rpm : 1050
Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 55.0...57.0
1000 s: (52.5...59.5)
Speed rpm : 1050
Del.quantity cm3/ : 55.0...57.0
1000 s: (52.5...59.5)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...90.0
1000 s: (77.0...93.0)
Rack travel in mm : 16.10...16.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.10...8.90
Del.quantity cm3/ : 10.0...12.0
1000 s: (8.0...14.0)
Spread cm3 : 2.50
1000 s: (4.50)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 o 5
 Edition : 09.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 195
 Injection pump
 Pump designation : PES6A90D41ORS2293Z
 EP type number : 0 410 896 037
 Governor
 Governor design. : RSV750...1250A1C618-1L
 Governor no. : 0 420 232 407

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 107.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 7.4...7.5

100 s: (7.2...7.7)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 750.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del.quantity : 74.5...75.5

1000 : (72.5...77.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 10.20

Speed rpm : 1260...1270

2nd rack travel in: 4.00

Speed rpm : 1295...1315

4th rack travel in: 1350

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 29...37

Setting point w/out bumper spring

Speed rpm : 750

Rack travel in mm : 5.6

Speed rpm : 750

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

Speed rpm : 760...790

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 78.0...88.0

1000 s: (75.0...91.0)

Remarks:

:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 12
 Edition : 04.11.88
 Replaces : 7.3.88
 Test oil : ISO-4113
 Combination no. : 0 400 876 320
 Injection pump
 Pump designation : PES6A85D410RS2591
 EP type number : 0 410 886 903
 Governor
 Governor design. : RSV325...1150A8C2020
 Governor no. : 0 420 232 345

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kW : 117.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 7.9...8.1

Del.quantity cm³/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 84.0...85.0

1000 : (82.0...87.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control Lever

position degrees: 55...63

Testing:

1st rack travel in: 11.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1295...1325

3rd rack travel in: 4.00

Speed rpm : 1350...1380
4th rack travel in: 1515
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.90...8.10
Rack travel in mm : 2.00
Speed rpm : 640...700

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.30...12.40
2nd speed rpm : 500
Rack travel in m: 13.10...13.20
3rd speed rpm : 925
Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.30...12.40
2nd pressure hPa : 145
Rack travel in m: 12.60...12.70
3rd pressure hPa : 80
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 650
Del.quantity cm3/ : 79.0...81.0
1000 s: (76.5...83.5)
Aneroid pressure h: 700
Speed rpm : 1000
Del.quantity cm3/ : 83.0...85.0
1000 s: (80.5...87.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 67.0...68.0
1000 s: (65.0...70.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 17.30...17.70

Remarks:

: DX 7.10

When adjusting and checking, adjust
speed regulation to 1210...1220 l/min.
Afterwards, readjust speed regulation
to 1160...1170 l/min.

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w
 Edition : 30.09.88
 Replaces : 15.6.88
 Test oil : ISO-4113
 Combination no. : 0 400 876 345
 Injection pump
 Pump designation : PES6A100D41ORS2754
 EP type number : 0 410 806 002
 Governor
 Governor design. : RSV400...1100A2C2229
 L
 Governor no. : 0 420 232 492

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 TF

1st version kW : 142.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.00...12.10
 Del. quantity cm³/ : 12.0...12.2
 100 s : (11.8...12.4)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 5.0...5.2
 Del. quantity cm³/ : 1.9...2.3
 100 s : (1.6...2.5)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del. quantity : 120.0...122.0
 1000 : (118.0...124.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 40...48

Testing:

1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.90...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 151.0...154.0
1000 s: (148.5...156.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (125.0...155.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE32036

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1. rque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h11
Edition : 30.09.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 0 400 876 347

Injection pump
Pump designation : PES6A100D410RS2676
EP type number : 9 410 230 023
Governor
Governor design. : RSV600...1100A2C2161
-5L
Governor no. : 0 420 232 495

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466AZ-02

1st version kW : 130.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K20

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.10...10.20

Del.quantity cm³/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 4.2...4.4

Del.quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 111.0...113.0

1000 : (109.0...115.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:
1st rack travel in: 9.10
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1195...1205
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 600
Rack travel in mm : 3.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 600
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 670...730

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.10...10.20
2nd speed rpm : 950
Rack travel in m: 10.70...10.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 95
Rack travel mm : 9.00...9.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.20...8.40
2nd pressure hPa : 145
Rack travel in m: 9.80...10.20
3rd pressure hPa : 700
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 950
Del.quantity cm3/ : 119.0...122.0
1000 s: (116.5...124.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 68.0...72.0
1000 s: (66.0...74.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (185.0...215.0)

LOW IDLE

Speed rpm : 600
Rack travel in mm : 4.20...4.40
Del.quantity cm3/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE32396

Setting without torque-control spring
retainer with 1 mm control-rod travel
less. Raising of full-load delivery
with torque-control spring retainer to
10.1 mm control-rod travel.

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 x
 Edition : 20.12.88
 Replaces : 15.6.88
 Test oil : ISO-4113

 Combination no. : 0 400 876 348

 Injection pump
 Pump designation : PES6A100D41ORS2754
 EP type number : 0 410 806 002
 Governor
 Governor design. : RSV400...1100A2C2204
 -2L
 Governor no. : 9 420 234 177

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466 TT

1st version kW : 124.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 130...150

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 3.1...3.5

100 s: (2.8...3.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 43...51

Testing:
1st rack travel in: 10.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 585...645

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.00...11.10
2nd speed rpm : 700
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm3/ : 127.5...130.5
1000 s: (125.0...133.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (125.0...155.0)

LOW IDLE

Speed rpm : 400

K23

Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 31.0...35.0
1000 s: (28.5...37.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks: : JOHN DEERE # RE29255

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1. rque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 1
 Edition : 20.12.88
 Replaces : 15.6.88
 Test oil : ISO-4113

Combination no. : 0 400 876 350

Injection pump
 Pump designation : PES6A100D41DRS2754
 EP type number : 0 410 806 002
 Governor
 Governor design. : RSV425...1100A2C2234
 L
 Governor no. : 0 420 232 498

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076TRW04

1st version kW : 122.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm³/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.5...102.5

1000 : (98.5...104.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 9.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1195...1205
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.60...10.70
2nd speed rpm : 700
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 123.5...126.5
1000 s: (121.0...129.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 95.0...115.0
1000 s: (90.0...120.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.90...5.10
Del. quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE29182

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1. rque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 2
 Edition : 20.12.88
 Replaces : 15.6.88
 Test oil : ISO-4113
 Combination no. : 0 400 876 351
 Injection pump
 Pump designation : PES6A100D410RS2754
 EP type number : 0 410 806 002
 Governor
 Governor design. : RSV425...1100A2C2234
 -1L
 Governor no. : 0 420 232 499

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 TRW01

1st version kW : 106.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

K26

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.70...9.80

Del. quantity cm³/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.1...5.3

Del. quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 8.70
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1190...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.70...9.80
2nd speed rpm : 700
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del.quantity cm³/ : 110.5...113.5
1000 s: (108.0...116.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.70
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks: : JOHN DEERE # RE29303

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1. rque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 3
Edition : 20.12.88
Replaces : 15.6.88
Test oil : ISO-4113

Combination no. : 0 400 876 352

Injection pump
Pump designation : PES6A100D410RS2754
EP type number : 0 410 806 002
Governor
Governor design. : RSV400...1100A2C2204
-4L
Governor no. : 0 420 232 500

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 ADW-01

1st version kW : 146.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

K28

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 3.1...3.5
100 s: (2.8...3.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

Wheel loader

1st rack travel in: 10.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1210...1220
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 585...645

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.60...11.70

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (125.0...155.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 31.0...35.0
1000 s: (28.5...37.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE35847

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

APPLICATION

L01

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 4
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 354
 Injection pump
 Pump designation : PES6A100D410RS2754
 EP type number : 0 410 806 002
 Governor
 Governor design. : RSV425...1100A2C2235
 L
 Governor no. : 0 420 232 511

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076TRW06

1st version kW : 98.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x wall thickness
 x length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

LO2

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del.quantity cm³/ : 8.3...8.5

100 s: (8.1...8.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 83.5...85.5

1000 : (81.5...87.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 8.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1190...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control Lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 9.00...9.10
2nd speed rpm : 650
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 650
Del.quantity cm3/ : 103.0...106.0
1000 s: (100.5...108.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE36069
Setting without torque-control spring
retainer with 1 mm control-rod travel
less. Raising of full-load delivery
with torque-control spring retainer to
9,0 mm control-rod travel.

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w 5
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 355
Injection pump
Pump designation : PES6A100D410RS2754
EP type number : 0 410 806 002
Governor
Governor design. : RSV425...1100A2C2235
-1L
Governor no. : 0 420 232 512

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076TRW07

1st version kW : 129.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

L04

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.00...11.10
2nd speed rpm : 700
Rack travel in m: 12.60...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 131.5...134.5
1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (125.0...155.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE36071

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
Start-of-delivery mark = 12,5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 o 5
 Edition : 28.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 356
 Injection pump
 Pump designation : PES6A95D32ORS2693
 EP type number : 0 410 896 914
 Governor
 Governor design. : RSV300...1300AOC2195
 -1R
 Governor no. : 0 420 233 222

Customer-spec. information
 Customer : DAF

Engine : DNT 620

1st version kW : 150.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 7.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.80...11.90

Del. quantity cm³/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 77.0...78.0

1000 : (75.0...80.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 56...64

Testing:

1st rack travel in: 9.70
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1400...1430
3rd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1590
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 10.70...10.80
2nd speed rpm : 500
Rack travel in m: 11.80...11.90
3rd speed rpm : 980
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 11.30...11.50

Measurement

Speed 1/min : 600
1st pressure hPa : 250
Rack travel in m: 11.60...11.70
3rd pressure hPa : 700
Rack travel in m: 11.80...11.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700

Speed rpm : 1290
Del.quantity cm3/ : 72.0...74.0
1000 s: (69.5...76.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 357
 Injection pump
 Pump designation : PES6A100D41ORS2762
 EP type number : 0 410 806 003
 Governor
 Governor design. : RSV400...1100A2C2229
 L
 Governor no. : 0 420 232 492

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 TF

1st version kW : 142.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

L08

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.90...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 151.0...154.0
1000 s: (148.5...156.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.00...5.20
Del. quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE32036

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1. rque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 1
 Edition : 20.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 359
 Injection pump
 Pump designation : PES6A100D41ORS2762
 EP type number : 0 410 806 003
 Governor
 Governor design. : RSV400...1100A2C2204
 -2L
 Governor no. : 9 420 234 177

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466 TT

1st version kW : 124.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 130...150

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del.quantity cm³/ : 3.1...3.5

100 s: (2.8...3.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 43...51

Testing:

1st rack travel in: 10.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 585...645

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.00...11.10
2nd speed rpm : 700
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 127.5...130.5
1000 s: (125.0...133.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400

L11

Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 31.0...35.0
1000 s: (28.5...37.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # 29255
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

APPLICATION
Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 2
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 360
Injection pump
Pump designation : PES6A100D410RS2762
EP type number : 0 410 806 003
Governor
Governor design. : RSV425...1100A2C2225
L
Governor no. : 9 420 234 176

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076ARW-06

1st version kW : 146.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 117.0...119.0

1000 : (115.0...121.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:
1st rack travel in: 11.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.5

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 650
Rack travel in m: 13.90...14.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 535
Rack travel in m: 12.30...12.40
3rd pressure hPa : 720
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 650
Del.quantity cm³/ : 150.5...153.5
1000 s: (148.0...156.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 129.0...133.0
1000 s: (126.0...136.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
: JOHN DEERE # 29298

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1. rque-control
APPLICATION ner.
Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 3
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 361
Injection pump
Pump designation : PES6A100D410RS2762
EP type number : 0 410 806 003
Governor
Governor design. : RSV400...1100A2C2204
-4L
Governor no. : 0 420 232 500

Customer-spec. information

Customer : JOHN DEERE

Engine : 6076 ADW-01

1st version kW : 146.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.60...11.70

Del. quantity cm³/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.8...6.0

Del. quantity cm³/ : 3.1...3.5

100 s: (2.8...3.7)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.60
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1210...1220
3rd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.30...1.40

Wheel Loader

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.4

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 585...645

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.60...11.70

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0
1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 31.0...35.0
1000 s: (28.5...37.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
: JOHN DEERE # RE35847

Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.
APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 e
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 362
Injection pump
Pump designation : PES6A100D410RS2764
EP type number : 0 410 806 004
Governor
Governor design. : RSV600...1100A2C2161
-6L
Governor no. : 0 420 232 505

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 AZ

1st version kW : 152.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
: (2.40...2.60)

Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 12.9...13.1

100 s: (12.7...13.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 5.7...5.9

Del. quantity cm³/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 129.5...131.5

1000 : (127.5...133.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 37...45

Testing:

1st rack travel in: 11.50

Speed rpm : 1145...1155

2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 600
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 600
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 720...780

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 175
Rack travel in m: 10.10...10.20
3rd pressure hPa : 285
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 68.5...72.5
1000 s: (65.5...75.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (175.0...205.0)

LOW IDLE

Speed rpm : 600
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 14.0...18.0
1000 s: (11.5...20.5)
Spread
cm3 : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE35281

Start-of-delivery mark at control-rod
travel 10.5 mm and 15° after start of
delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 f
Edition : 20.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 363
Injection pump
Pump designation : PES6A100D410RS2765
EP type number : 0 410 806 005
Governor
Governor design. : RSV400...1100A2C2204
-5L
Governor no. : 0 420 232 506

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466AT-01

1st version kW : 125.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
: (2.40...2.60)

Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 11.0...11.2

100 s: (10.8...11.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 110.0...112.0

1000 : (108.0...114.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 9.90

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1220...1230
4th rack travel in: 1300
Speed rpm : 0.30...1.40

: JOHN DEERE # RE35282

LOW IDLE 1

Control lever
position degrees: 25...33
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 585...645

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.90...11.00
2nd speed rpm : 700
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 114.5...117.5
1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (175.0...205.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

L19

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark at control-rod
travel 10.5 mm and 15° after start of
delivery. ainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 d 4
 Edition : 30.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 364
 Injection pump
 Pump designation : PES6A100D410RS2762
 EP type number : 0 410 806 003
 Governor
 Governor design. : RSV425...1100A2C2225
 -4L
 Governor no. : 0 420 232 510

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 TRW 05

1st version kW : 122.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

L20

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del. quantity cm³/ : 9.7...9.9

100 s : (9.5...10.1)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³/ : 1.8...2.2

100 s : (1.5...2.4)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 97.5...99.5

1000 : (95.5...101.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 9.40
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1325
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.40...10.50
2nd speed rpm : 700
Rack travel in m: 11.60...11.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.80

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 11.20...11.40
2nd pressure hPa : 295
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 120.5...123.5
1000 s: (118.0...126.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...129.0
1000 s: (122.0...132.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (125.0...155.0)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: JOHN DEERE # RE36072

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
Start-of-delivery mark = 13,5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 39
 Edition : 24.10.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 365
 Injection pump
 Pump designation : PES6A85D410RS2761-1
 EP type number : 0 410 886 894
 Governor
 Governor design. : RSV325...1150A8C2020
 -1L
 Governor no. : 0 420 232 515

Customer-spec. information
 Customer : KHD

Engine : BF6L913

1st version kW : 110.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 8.3...8.4

100 s: (8.1...8.6)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.3...7.5

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 83.5...84.5

1000 : (81.5...86.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 11.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

3rd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1440
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.00...12.10
2nd speed rpm : 500
Rack travel in m: 12.90...13.00
3rd speed rpm : 890
Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 11.80...12.00
3rd pressure hPa : 700
Rack travel in m: 12.90...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm³/ : 89.0...91.0
1000 s: (86.5...93.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 64.5...65.5
1000 s: (62.5...67.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 c 6
 Edition : 11.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 366
 Injection pump
 Pump designation : PES6A90D41ORS2710
 EP type number : 0 410 896 082
 Governor
 Governor design. : RSV350...1200A1C1154
 -1L
 Governor no. : 0 420 232 470

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 81.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 9.80...9.90
 Del. quantity cm³/ : 5.3...5.4
 100 s : (5.1...5.6)
 Spread cm³ : 0.3
 100 s : (0.4)

2nd speed rpm : 370.0
 Rack travel in mm : 7.8...8.4
 Del. quantity cm³/ : 1.0...1.2
 100 s : (0.8...1.4)
 Spread cm³ : 0.2
 100 s : (8.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del. quantity : 53.0...54.0
 1000 : (51.0...56.0)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 59...67

Testing:
 1st rack travel in: 8.80
 Speed rpm : 1240...1245
 2nd rack travel in: 4.00
 Speed rpm : 1262...1275
 3rd rack travel in: 4.00

Speed rpm : 1305...1335
4th rack travel in: 1400
Speed rpm : 0.30...1.40
5th rack travel in: 1250...1260
Speed rpm : 8.80

Remarks:

APPLICATION
Unimog

LOW IDLE 1
Control Lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 370
Rack travel in mm : 8.1

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 370
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.80...9.90
2nd speed rpm : 600
Rack travel in m: 11.30...11.40
3rd speed rpm : 850
Rack travel in m: 11.10...11.30
4th speed rpm : 950
Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 50.0...52.0
1000 s: (47.5...54.5)
Speed rpm : 850
Del.quantity cm3/ : 51.0...54.0
1000 s: (48.5...56.5)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 85.0...95.0
1000 s: (82.0...98.0)
Rack travel in mm : 17.10...17.50

LOW IDLE

Speed rpm : 370
Rack travel in mm : 7.80...8.40
Del.quantity cm3/ : 10.0...12.0
1000 s: (8.0...14.0)
Spread cm3 : 2.50
1000 s: (84.50)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RAB 10,8 a
 Edition : 02.12.88
 Replaces : 30.3.87
 Test oil : ISO-4113

Combination no. : 0 401 276 051

Injection pump
 Pump designation : PES6A100D410RS3039
 EP type number : 0 411 206 018
 Governor
 Governor design. : RSV475...950A1C2121L
 Governor no. : 0 420 232 384

Customer-spec. information
 Customer : RABA

Engine : D2156 MKTL6

1st version kW : 184.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.60...1.70
 : (1.55...1.75)
 Rack travel in mm : 9.00...12.00

L26

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.60...13.70

Del. quantity cm³/ : 15.2...15.4

100 s: (15.0...15.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 475.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 1.1...1.5

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 750

Del. quantity : 152.0...154.0

1000 : (150.0...156.0)

Spread cm³ : 3.00

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 12.60

Speed rpm : 990...1000

2nd rack travel in: 4.00

Speed rpm : 1025...1055
3rd rack travel in: 4.00
Speed rpm : 1030...1060
4th rack travel in: 1195
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 475
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 475
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 570...630
Speed rpm : 675
Maximum rack travel: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 950
Rack travel in m: 13.60...13.70
2nd speed rpm : 500
Rack travel in m: 15.70...15.80
3rd speed rpm : 840
Rack travel in m: 14.90...15.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 750
Rack travel mm : 15.70...15.80

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 13.40...13.50
2nd pressure hPa : 550
Rack travel in m: 15.00...15.10
3rd pressure hPa : 420
Rack travel in m: 14.10...14.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 750
Del.quantity cm³/ : 180.0...184.0
1000 s: (178.0...186.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : <149.0
1000 s: (<151.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 990...1000

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 b2
 Edition : 11.11.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 840 763
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQ300/1000PA803-1
 Governor no. : 0 421 801 463

Customer-spec. information
 Customer : KHD

Engine : BF12L513/C

1st version kW : 342.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.50...12.60
 Del.quantity cm3/ : 16.4...16.6
 100 s : (16.1...16.9)
 Spread cm3 : 0.5
 100 s : (0.8)

2nd speed rpm : 300.0
 Rack travel in mm : 6.6...6.8
 Del.quantity cm3/ : 1.5...2.1
 100 s : (1.2...2.3)
 Spread cm3 : 0.7
 100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del.quantity : 164.0...166.0
 1000 : (161.0...169.0)
 Spread cm3 : 5.00
 1000 : (8.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 11.50
 Speed rpm : 1035...1050
 2nd rack travel in: 4.00
 Speed rpm : 1090...1120

4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack trave: 8.10
Speed rpm : 300
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.50...12.60
2nd speed rpm : 650
Rack travel in m: 12.80...13.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.50
Speed rpm : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 a3
 Edition : 16.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 840 764
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV300...1150PA820-1
 Governor no. : 0 421 813 727

Customer-spec. information
 Customer : KHD

Engine : BF12L513

1st version kW : 353.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

MOZ

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 15.1...15.3

100 s: (14.8...15.6)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.7...6.9

Del.quantity cm3/ : 1.5...2.1
 100 s: (1.2...2.3)

Spread cm3 : 0.7

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.20

3rd speed rpm : 750
 travel mm : 4.90...5.30

4th speed rpm : 1200
 travel mm : 8.40...8.60

5th speed rpm : 1300
 travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 750

Del.quantity : 151.0...153.0

1000 : (148.0...156.0)

Spread cm³ : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control Lever
position degrees: 54...62

Testing:
1st rack travel in: 11.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 20...28

Testing:
Speed rpm : 100
Minimum rack travel: 8.30
Speed rpm : 300
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION

Speed rpm : 300...510

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.00...12.10
2nd speed rpm : 650
Rack travel in m: 12.30...12.50
3rd speed rpm : 1000
Rack travel in m: 12.20...12.30

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 450
Pressure hPa : 750
Rack travel mm : 12.30...12.50

Measurement
Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 410
Rack travel in m: 11.60...11.70
3rd pressure hPa : 350
Rack travel in m: 11.00...11.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 750
Speed rpm : 650
Del. quantity cm³/ : 156.0...160.0
1000 s: (153.0...163.0)
Aneroid pressure h: -
Speed rpm : 450
Del. quantity cm³/ : 118.0...122.0
1000 s: (115.0...125.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 160.0...180.0
1000 s: (156.0...184.0)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 a2
 Edition : 26.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 840 765
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV300...1000PA907
 Governor no. : 0 421 813 729

Customer-spec. information
 Customer : KHD

Engine : BF12L513C

1st version kW : 315.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

MO4

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 14.9...15.1

100 s : (14.6...15.4)

Spread cm³ : 0.5

100 s : (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del. quantity cm³/ : 1.5...2.1

100 s : (1.2...2.3)

Spread cm³ : 0.7

100 s : (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.60...1.90

2nd speed rpm : 450
 travel mm : 3.00...3.40

3rd speed rpm : 750
 travel mm : 5.20...5.60

4th speed rpm : 1050
 travel mm : 7.90...8.10

5th speed rpm : 1120
 travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 149.0...151.0

1000 : (146.0...154.0)

Spread cm³ : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 10.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 20...28

Testing:
Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 315...550

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.90...12.00
2nd speed rpm : 650
Rack travel in m: 12.40...12.50
3rd speed rpm : 800
Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³ / : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 i8
Edition : 02.12.88
Replaces : 12.9.86
Test oil : ISO-4113

Combination no. : 0 401 846 463

Injection pump
Pump designation : PE6P110A320RS372-1
EP type number : 0 411 816 145
Governor
Governor design. : RQ250/1100PA417-1
Governor no. : 0 421 801 205

Customer-spec. information
Customer : DAF

Engine : DKTD 1160

1st version kW : 191.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

MO6

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del. quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 700

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 700

Rack travel in mm : 15.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack trave: 7.80
Speed rpm : 250
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 460...500

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.20...12.30
2nd speed rpm : 1100
Rack travel in m: 12.10...12.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.40...11.60
2nd pressure hPa : 300
Rack travel in m: 11.80...11.90
3rd pressure hPa : 280
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 128.0...130.0
1000 s: (125.5...132.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 245.0...285.0
1000 s: (241.0...289.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...6.80
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 4.50
1000 s: (7.50)

Remarks:

See VDT-I-420/115

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 o 1
 Edition : 04.11.88
 Replaces : 7.84
 Test oil : ISO-4113
 Combination no. : 0 401 846 471
 Injection pump
 Pump designation : PE6P100A72ORS447
 EP type number : 0 411 806 191
 Governor
 Governor design. : RQ225/1200PA617
 Governor no. : 0 421 801 157

Customer-spec. information
 Customer : DAF

Engine : DHT 825

1st version kW : 162.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

MO8

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.40...11.50

Del. quantity cm³/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 225.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del. quantity : 118.5...120.5

1000 : (116.5...122.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.40

Speed rpm : 1235...1250

2nd rack travel in: 4.00

Speed rpm : 1305...1335

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 5.4

Testing:

Speed rpm : 100
Minimum rack trave: 6.00
Speed rpm : 225
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 365...405

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.60...11.70
2nd speed rpm : 1200
Rack travel in m: 11.30...11.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 600
Rack travel in m: 10.40...10.50
2nd pressure hPa : 315
Rack travel in m: 11.10...11.20
3rd pressure hPa : 270
Rack travel in m: 10.50...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm3/ : 93.5...95.5
1000 s: (91.5...97.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.40
Speed rpm : 1235...1250

STARTING FUEL DELIVERY

Speed rpm : 100

M09

Del.quantity cm3/ : 210.0...230.0
1000 s: (206.0...234.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

See VDT-I-420/115

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 10,3 a
Edition : 09.12.88
Replaces : 7.84
Test oil : ISO-4113
Combination no. : 0 401 846 475
Injection pump
Pump designation : PE6P110A72ORS453
EP type number : 0 411 816 150
Governor
Governor design. : RQV425...1000PA438-1
Governor no. : 0 421 813 340

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8205-03-500

1st version kW : 128.7
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

M10

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 9.8...10.1

100 s: (9.5...10.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 425.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 2.1...2.7

100 s: (1.8...2.9)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 98.0...101.0

1000 : (95.5...103.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.00

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 11...19

Testing:

Speed rpm : 100
Minimum rack trave: 8.50
Speed rpm : 425
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

Speed rpm : 420...515

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 200
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 h
 Edition : 02.12.88
 Replaces : 5.8.88
 Test oil : ISO-4113
 Combination no. : 0 401 846 482
 Injection pump
 Pump designation : PE6P120A32ORS257
 EP type number : 0 411 826 075
 Governor
 Governor design. : RQV250...1100PA680
 Governor no. : 0 421 813 374

Customer-spec. information
 Customer : ENASA

Engine : 96 T1 AX,BX

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

M12

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080
 Rack travel in mm : 10.00...10.10
 Del. quantity cm³/ : 18.8...19.0
 100 s: (18.5...19.3)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 5.5...5.7
 Del. quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40
 2nd speed rpm : 350
 travel mm : 1.70...2.30
 3rd speed rpm : 650
 travel mm : 4.00...4.60
 4th speed rpm : 1145
 travel mm : 8.30...8.50
 5th speed rpm : 1225
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1080
 Aneroid pressure h: 900
 Del. quantity : 188.0...190.0
 1000 : (185.0...193.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 43...51

Testing:

1st rack travel in: 9.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1320
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...22

Testing:

Speed rpm : 100
Minimum rack travel: 7.10
Speed rpm : 250
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 250...380

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 10.00...10.10
2nd speed rpm : 650
Rack travel in m: 10.50...10.70
3rd speed rpm : 850
Rack travel in m: 10.20...10.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.20...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...9.10
2nd pressure hPa : 415
Rack travel in m: 10.00...10.10
3rd pressure hPa : 290
Rack travel in m: 9.20...9.40

START CUT-OUT

Speed 1/min : 170 (150)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 650
Del.quantity cm3/ : 173.0...179.0
1000 s: (170.0...182.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 128.0...130.0
1000 s: (125.0...133.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)
Rack travel in mm : 19.50...21.00

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 l
 Edition : 30.09.88
 Replaces : 6.4.88
 Test oil : ISO-4113

Combination no. : 0 401 846 499

Injection pump
 Pump designation : PE6P120A32ORS474
 EP type number : 0 411 826 134
 Governor
 Governor design. : RQV275...1200PA425-3
 Governor no. : 0 421 813 441

Customer-spec. information
 Customer : RVI

Engine : MIDS062030

1st version kW : 168.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 15.1...15.3
 100 s : (14.8...15.6)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm³/ : 1.5...2.1
 100 s : (1.2...2.4)

Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.20...1.40
 2nd speed rpm : 400
 travel mm : 2.90...3.40
 3rd speed rpm : 900
 travel mm : 5.80...6.00
 4th speed rpm : 1200
 travel mm : 7.80...8.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1250
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Aneroid pressure h: 700
 Del.quantity : 151.0...153.0
 1000 : (148.0...156.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:

1st rack travel in: 10.90
Speed rpm : 1265...1275
2nd rack travel in: 4.00
Speed rpm : 1380...1410
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 200
Minimum rack travel: 9.10
Speed rpm : 275
Rack travel in mm : 6.30...6.50

CONSTANT REGULATION

Speed rpm : 275...360

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.80
2nd pressure hPa : 195
Rack travel in m: 11.60...11.70
3rd pressure hPa : 175
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750

Del.quantity cm³/ : 139.0...145.0
1000 s: (136.0...148.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 92.0...94.0
1000 s: (89.0...97.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: -1.00
Speed rpm : 1265...1275

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 105.0...125.0
1000 s: (101.0...129.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : -5.40...-5.60
Del.quantity cm³/ : 15.0...21.0
1000 s: (12.0...24.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark at the "INJ"
marking

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6 y6
 Edition : 09.01.89
 Replaces : 11.3.88
 Test oil : ISO-4113

Combination no. : 0 401 846 537

Injection pump
 Pump designation : PE6P120A32ORS415-1
 EP type number : 0 411 826 123
 Governor
 Governor design. : RQ250/1000PA417-7
 Governor no. : 0 421 801 382

Customer-spec. information
 Customer : DAF

Engine : DKZ 1160

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 20.6...20.8
 100 s: (20.3...21.1)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.6...7.0
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)

Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 650
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 700
 Del. quantity : 206.0...208.0
 1000 : (203.0...211.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 650
 Rack travel in mm : 15.8

Testing:
 1st rack travel in: 11.50
 Speed rpm : 1035...1050
 2nd rack travel in: 4.00
 Speed rpm : 1100...1130
 4th rack travel in: 1200
 Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack trave: 7.40
Speed rpm : 250
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 450...490

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.70...12.80
2nd speed rpm : 990
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 340
Rack travel in m: 11.80...11.90
3rd pressure hPa : 280
Rack travel in m: 10.60...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 140.0...142.0
1000 s: (137.0...145.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 1035...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 305.0...345.0
1000 s: (305.0...345.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.40...6.60

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 a7
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 544G
Injection pump
Pump designation : PE6P100A820LS130
EP type number : 0 411 806 179
Governor
Governor design. : RQ250/1050PA627-1
Governor no. : 0 421 801 407

Customer-spec. information
Customer : ENASA

Engine : 9101.08.V2

1st version kW : 125.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 12.6...12.8

100 s: (12.4...13.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Del. quantity : 126.0...128.0

1000 : (124.0...130.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.50

Speed rpm : 1045...1160

2nd rack travel in: 4.00

Speed rpm : 1105...1135

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 175

Rack travel in mm : 5.0

Testing:

Speed rpm : 75

Minimum rack trave: 6.50

Speed rpm : 175

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed rpm : 240...280

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1045...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 143.0...158.0

1000 s: (139.0...162.0)

LOW IDLE

Speed rpm : 175

Rack travel in mm : 4.90...5.10

Remarks:

:

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 a8
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 544H
Injection pump
Pump designation : PE6P100A82DLS130
EP type number : 0 411 806 179
Governor
Governor design. : RQ250/1050PA627-1
Governor no. : 0 421 801 407

Customer-spec. information
Customer : ENASA

Engine : 95 A2 ZZ,
1st version kW : 127.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00

M20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 10.4...10.6

100 s: (10.2...10.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Del.quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.30

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 175

Rack travel in mm : 5.0

Testing:

Speed rpm : 75

Minimum rack trave: 6.50

Speed rpm : 175

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed rpm : 240...280

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 123.0...138.0

1000 s: (119.0...142.0)

LOW IDLE

Speed rpm : 175

Rack travel in mm : 4.90...5.10

Remarks:

:

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 a9
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 544K
Injection pump
Pump designation : PE6P100A820LS130
EP type number : 0 411 806 179
Governor
Governor design. : RQ250/1050PA627-1
Governor no. : 0 421 801 407

Customer-spec. information
Customer : ENASA

Engine : 95 T1 A0EB 110

1st version kW : 146.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.10...14.20

Del.quantity cm³/ : 16.7...16.9

100 s: (16.5...17.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 167.0...169.0

1000 : (165.0...171.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 13.10

Speed rpm : 795...810

2nd rack travel in: 4.00

Speed rpm : 830...860

4th rack travel in: 950

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 350...390

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

Speed rpm : 795...810

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 118.0...133.0

1000 s: (114.0...137.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 12,0 a1
 Edition : 22.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 548A
 Injection pump
 Pump designation : PE6P120A32ORS257
 EP type number : 0 411 826 075
 Governor
 Governor design. : RQ250/1100PA877
 Governor no. : 0 421 801 409

Customer-spec. information
 Customer : ENASA

Engine : 91T1 AY

1st version kW : 206.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 9.20...9.30

Del.quantity cm³/ : 16.9...17.1

100 s: (16.6...17.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Aneroid pressure h: 900

Del.quantity : 169.0...171.0

1000 : (166.0...174.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 8.20

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack trave: 7.10
Speed rpm : 250
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 9.20...9.30
2nd speed rpm : 700
Rack travel in m: 9.60...9.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 9.40...9.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 320
Rack travel in m: 8.90...9.00
3rd pressure hPa : 450
Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 165.0...171.0
1000 s: (162.0...174.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 123.0...125.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 12,0 a2
 Edition : 22.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 548B
 Injection pump
 Pump designation : PE6P120A32ORS257
 EP type number : 0 411 826 075
 Governor
 Governor design. : RQ250/1100PA877
 Governor no. : 0 421 801 409

Customer-spec. information
 Customer : ENASA

Engine : 91T1 CZ

1st version kW : 228.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Aneroid pressure h: 900

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.80

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 7.10
Speed rpm : 250
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 11.80...11.90
2nd speed rpm : 650
Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.20...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.80...10.20
2nd pressure hPa : 400
Rack travel in m: 9.70...9.80
3rd pressure hPa : 465
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 650
Del.quantity cm³/ : 197.0...203.0
1000 s: (194.0...206.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically un~~atched~~ starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 12,0 a3
Edition : 22.12.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 548C
Injection pump
Pump designation : PE6P120A320RS257
EP type number : 0 411 826 075
Governor
Governor design. : RQ250/1100PA877
Governor no. : 0 421 801 409

Customer-spec. information
Customer : ENASA

Engine : 9156.05

1st version kW : 228.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

M28

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.40...11.50

Del. quantity cm³/ : 22.2...22.4

100 s : (21.9...22.7)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm³ : 0.8

100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Aneroid pressure h: 900

Del. quantity : 222.0...224.0

1000 : (219.0...227.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.40

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 175
Rack travel in mm : 6.0

Testing:

Speed rpm : 75
Minimum rack trave: 7.50
Speed rpm : 175
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 280...320

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 14.40...11.50
2nd speed rpm : 700
Rack travel in m: 11.60...11.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.40...8.80
2nd pressure hPa : 340
Rack travel in m: 9.30...9.40
3rd pressure hPa : 470
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 189.0...195.0
1000 s: (186.0...198.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 126.0...128.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 175
Rack travel in mm : 5.90...6.10

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 12,0 a4
 Edition : 22.12.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 548D
 Injection pump
 Pump designation : PE6P120A32ORS257
 EP type number : 0 411 826 075
 Governor
 Governor design. : RQ250/1100PA877
 Governor no. : 0 421 801 409

Customer-spec. information
 Customer : ENASA

Engine : 9157.08

1st version kW : 225.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

NO2

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Aneroid pressure h: 900

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.40

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 400...440

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 11.40...11.50
2nd speed rpm : 700
Rack travel in m: 11.60...11.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.80...8.20
2nd pressure hPa : 340
Rack travel in m: 9.30...9.40
3rd pressure hPa : 470
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm3/ : 201.0...207.0
1000 s: (198.0...210.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 111.0...113.0
1000 s: (108.0...116.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...160.0
1000 s: (136.0...164.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 d
 Edition : 09.01.89
 Replaces : 23.9.88
 Test oil : ISO-4113

Combination no. : 0 401 846 549

Injection pump
 Pump designation : PE6P100A82DLS503
 EP type number : 0 411 806 197
 Governor
 Governor design. : RQV250...1000PA811
 Governor no. : 0 421 813 556

Customer-spec. information
 Customer : ENASA

Engine : 95 T1 AX,BX

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

N04

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.7...7.9

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 400
 travel mm : 2.20...2.80

3rd speed rpm : 650
 travel mm : 4.50...5.10

4th speed rpm : 1050
 travel mm : 8.50...8.70

5th speed rpm : 1140
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 165.0...167.0

1000 : (163.0...169.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 46...54

Testing:
1st rack travel in: 13.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 250...350

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 980
Rack travel in m: 14.20...14.30
2nd speed rpm : 550
Rack travel in m: 15.00...15.30
3rd speed rpm : 750
Rack travel in m: 14.80...15.00
4th speed rpm : 850
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.90...13.30
2nd pressure hPa : 400
Rack travel in m: 14.10...14.20
3rd pressure hPa : 300
Rack travel in m: 13.40...13.60

START CUT-OUT

N05

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 170.0...174.0
1000 s: (168.0...176.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 d1
 Edition : 09.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 549A
 Injection pump
 Pump designation : PE6P100A820LS503
 EP type number : 0 411 806 197
 Governor
 Governor design. : RQV250...1000PA811
 Governor no. : 0 421 813 556

Customer-spec. information
 Customer : ENASA

Engine : 95 T1 BV

1st version kW : 165.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

NO6

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.7...7.9

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 400
 travel mm : 2.20...2.80

3rd speed rpm : 650
 travel mm : 4.50...5.10

4th speed rpm : 1050
 travel mm : 8.50...8.70

5th speed rpm : 1140
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 165.0...167.0

1000 : (163.0...169.0)

Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 46...54

Testing:
1st rack travel in: 13.20
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack trave: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 250...350

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 980
Rack travel in m: 14.20...14.30
2nd speed rpm : 550
Rack travel in m: 15.00...15.30
3rd speed rpm : 750
Rack travel in m: 14.80...15.00
4th speed rpm : 850
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.70...14.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.90...13.30
2nd pressure hPa : 400
Rack travel in m: 14.10...14.20
3rd pressure hPa : 300

NO7

Rack travel in m: 13.40...13.60

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 170.0...174.0
1000 s: (168.0...176.0)
Speed rpm : 450
Del.quantity cm3/ : 90.0...94.0
1000 s: (88.0...96.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 10,1 d2
 Edition : 09.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 549B
 Injection pump
 Pump designation : PE6P100A820LS503
 EP type number : 0 411 806 197
 Governor
 Governor design. : RQV250...1000PA811
 Governor no. : 0 421 813 556

Customer-spec. information
 Customer : ENASA

Engine : 95 T1 AW

1st version kW : 155.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

NOS

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 15.0...15.2

100 s: (14.8...15.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.7...7.9

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 400
 travel mm : 2.20...2.80

3rd speed rpm : 650
 travel mm : 4.50...5.10

4th speed rpm : 1050
 travel mm : 8.50...8.70

5th speed rpm : 1140
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del.quantity : 150.0...152.0

1000 : (148.0...154.0)

Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 46...54

Testing:
1st rack travel in: 12.30
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 250...350

TORQUE CONTROL
Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 980
Rack travel in m: 13.30...13.40
2nd speed rpm : 550
Rack travel in m: 14.00...14.30
3rd speed rpm : 750
Rack travel in m: 13.80...14.00
4th speed rpm : 850
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.70...13.00
2nd pressure hPa : 260
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 143.0...147.0
1000 s: (141.0...149.0)
Speed rpm : 450
Del.quantity cm³/ : 89.0...93.0
1000 s: (87.0...95.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 127.0...129.0
1000 s: (124.0...132.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1030...1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.90...6.10

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION
Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 a2
 Edition : 07.10.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 550D
 Injection pump
 Pump designation : PE6P120A32ORS257
 EP type number : 0 411 826 075
 Governor
 Governor design. : RQV250...1050PA808
 Governor no. : 0 421 813 553

Customer-spec. information
 Customer : ENASA

Engine : 96 T1 CW

1st version kW : 206.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

N1G

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 21.5...21.7

100 s: (21.2...22.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 350
 travel mm : 1.70...2.30

3rd speed rpm : 700
 travel mm : 4.50...5.10

4th speed rpm : 1095
 travel mm : 8.20...8.40

5th speed rpm : 1175
 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Aneroid pressure h: 900

Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 10.10
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 7.20
Speed rpm : 250
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 250...370

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...9.10
2nd pressure hPa : 510
Rack travel in m: 10.40...10.50
3rd pressure hPa : 300
Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 650
Del.quantity cm³/ : 193.0...199.0
1000 s: (190.0...202.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 127.0...129.0
1000 s: (124.0...132.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (136.0...164.0)
Rack travel in mm : 19.50...21.00

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

APPLICATION
Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,6i16
Edition : 07.10.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 401 846 560

Injection pump
Pump designation : PE6P120A32ORS372-1
EP type number : 0 411 826 121
Governor
Governor design. : RQ250/1100PA417-6
Governor no. : 0 421 801 367

Customer-spec. information
Customer : DAF

Engine : DKS 1160

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 19.4...19.6

100 s: (19.1...19.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 700

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del.quantity : 194.0...196.0

1000 : (191.0...199.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 700

Rack travel in mm : 15.8

Testing:

1st rack travel in: 9.90

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.3

Testing:

Speed rpm : 100

Minimum rack trave: 7.40

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 440...480

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 11.10...11.20

2nd speed rpm : 1100

Rack travel in m: 11.00...11.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 700

Rack travel mm : 10.90...11.00

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.80...9.90

2nd pressure hPa : 300

Rack travel in m: 10.60...10.70

3rd pressure hPa : 260

Rack travel in m: 10.00...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 134.5...136.5

1000 s: (131.5...139.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 320.0...360.0

1000 s: (316.0...364.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,1 a
 Edition : 09.12.88
 Replaces : 4.11.88
 Test oil : ISO-4113

Combination no. : 0 401 846 811

Injection pump
 Pump designation : PE6P120A32ORS3148
 EP type number : 0 411 826 746
 Governor
 Governor design. : RQ750PA783
 Governor no. : 0 421 801 334

Customer-spec. information
 Customer : VOLVO-PENTA

Engine : TJD121KG

1st version kW : 246.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
 : (2.55...2.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 25.5...25.7

100 s: (25.2...26.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 1.5...2.0

Spread cm³ : 0.4

100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 255.0...257.0

1000 : (252.0...260.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 21...29

Testing:

1st rack travel in: 11.30

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 776...789

4th rack travel in: 850

Speed rpm : 0.00...1.00

LOW IDLE 1

Testing:

Speed rpm : 100

Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 750...755

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...220.0

Remarks:
:

APPLICATION
Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 a1
 Edition : 22.12.88
 Replaces : 11.12.87
 Test oil : ISO-4113

Combination no. : 0 401 846 826

Injection pump
 Pump designation : PE6P120A32ORS3178
 EP type number : 0 411 826 752
 Governor
 Governor design. : RQV250...1025PA657-10
 Governor no. : 0 421 813 567

Customer-spec. information
 Customer : VOLVO

Engine : TD122FS

1st version kW : 287.0
 Rated speed : 2050

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.5

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 252.0...254.0

1000 : (249.0...257.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 13.00

Speed rpm : 1055...1065

2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 6...14

Testing:

Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 250
Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 100
Rack travel in m: 10.30...10.40
3rd pressure hPa : 810
Rack travel in m: 13.60...13.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1055...1065

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.10
Del.quantity cm³/ : 18.0...23.0
1000 s: (15.5...25.5)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 s 4
 Edition : 28.11.88
 Replaces : 18.9.87
 Test oil : ISO-4113

Combination no. : 0 401 846 830

Injection pump
 Pump designation : PE6P110A320LS3835
 EP type number : 0 411 816 749
 Governor
 Governor design. : RQV300...950PA829K
 Governor no. : 0 421 815 166

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 150.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.10...13.20

Del.quantity cm³/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm³ : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...8.9

Del.quantity cm³/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm³ : 0.4

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.30

2nd speed rpm : 500
 travel mm : 3.20...3.40

3rd speed rpm : 800
 travel mm : 5.90...6.10

4th speed rpm : 1000
 travel mm : 8.00...8.40

5th speed rpm : 1050
 travel mm : 9.50...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 975

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 950

Del.quantity : 126.0...128.0
1000 : (123.5...130.5)
Spread cm³ : 4.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 12.10
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack trave: 10.60
Speed rpm : 300
Rack travel in mm : 8.80...9.00

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 0.20
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 13.10...13.20
2nd speed rpm : 600
Rack travel in m: 12.90...13.10
3rd speed rpm : 750
Rack travel in m: 13.10...13.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 117.0...120.0
1000 s: (114.0...123.0)
Spread cm³ : 6.00
1000 s: (9.00)
Speed rpm : 750
Del.quantity cm³/ : 120.0...124.0
1000 s: (117.0...127.0)
Spread cm³ : 6.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (126.0...154.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11, Or11
 Edition : 12.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 837
 Injection pump
 Pump designation : PE6P110A72ORS3040
 EP type number : 0 411 816 713
 Governor
 Governor design. : RQV200...1100PA555-3
 Governor no. : 0 421 813 633

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS11 39

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.30...3.40
 : (3.25...3.45)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.60...13.70
 Del. quantity cm³/ : 16.8...17.0
 100 s : (16.6...17.2)
 Spread cm³ : 0.6
 100 s : (0.8)
 2nd speed rpm : 225.0
 Rack travel in mm : 4.4...5.0
 Del. quantity cm³/ : 1.7...2.1
 100 s : (-)
 Spread cm³ : 0.2
 100 s : (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 0.50...0.90
 2nd speed rpm : 350
 travel mm : 2.00...2.60
 3rd speed rpm : 650
 travel mm : 4.90...5.50
 4th speed rpm : 1145
 travel mm : 8.30...8.50
 5th speed rpm : 1300
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1120
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h : 900
 Del. quantity : 168.0...170.0
 1000 : (166.0...172.0)
 Spread cm³ : 6.00
 1000 : (8.00)

RATED SPEED

1st version
Control Lever
position degrees: 58...66

Testing:
1st rack travel in: 12.60
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 4...12

Testing:
Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 225
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 295...355

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.80...12.20
2nd pressure hPa : 420
Rack travel in m: 13.20...13.30
3rd pressure hPa : 290
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 165.5...170.5
1000 s: (163.0...173.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 133.0...137.0
1000 s: (131.0...139.0)

BREAKAWAY

NZ1

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1988-09-12
Start of delivery - engine: 19° before
TDC
Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 13,8 i2
 Edition : 09.12.88
 Replaces : 12.11.87
 Test oil : ISO-4113
 Combination no. : 0 401 846 843
 Injection pump
 Pump designation : PE6P120A72ORS3069
 EP type number : 0 411 826 712
 Governor
 Governor design. : RGV300...1000PA501-4
 Govenner no. : 0 421 813 609

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8210.22.373

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1 †

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 12.50...12.60
 Del.quantity cm3/ : 20.5...20.7
 100 s: (20.2...21.0)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.4
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.50...1.90
 2nd speed rpm : 450
 travel mm : 2.90...3.30
 3rd speed rpm : 800
 travel mm : 5.70...6.10
 4th speed rpm : 1000
 travel mm : 8.00...8.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1035
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 700
 Del.quantity : 205.0...207.0
 1000 : (202.0...210.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 11.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 100
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION
Speed rpm : 320...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 280
Rack travel in m: 11.80...11.90
3rd pressure hPa : 230
Rack travel in m: 10.70...11.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm³/ : 215.0...221.0
1000 s: (212.0...224.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 131.0...133.0
1000 s: (128.0...136.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...215.0
1000 s: (181.0...219.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 e 4
 Edition : 12.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 846
 Injection pump
 Pump designation : PE6P120A32ORS3141Q
 EP type number : 0 411 826 768
 Governor
 Governor design. : RQV200...1100PA729-1
 Governor no. : 0 421 813 470

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS9 04

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 10.00...10.10
 Del.quantity cm³/ : 12.8...13.0
 100 s: (12.5...13.3)
 Spread cm³ : 0.5
 100 s: (0.8)

2nd speed rpm : 225.0
 Rack travel in mm : 4.4...4.8
 Del.quantity cm³/ : 1.1...1.5
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 0.50...0.90
 2nd speed rpm : 350
 travel mm : 2.00...2.60
 3rd speed rpm : 650
 travel mm : 4.90...5.50
 4th speed rpm : 1145
 travel mm : 8.30...8.50
 5th speed rpm : 1245
 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1120
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 128.0...130.0
 1000 : (125.0...133.0)
 Spread cm³ : 5.00
 1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 9.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 4...12

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 225
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 295...355

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100
Del. quantity cm³/ : 136.0...144.0
1000 s: (134.0...146.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 290.0...340.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.40...4.60

Remarks:

:

N25

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on December 18, 1986
Engine model DS 11 - 17° before top
dead center.

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 j
 Edition : 12.01.89
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 849
 Injection pump
 Pump designation : PE6P120A32ORS3196
 EP type number : 0 411 826 763
 Governor
 Governor design. : RQV200...1100PA729-1
 Governor no. : 0 421 813 470

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS9 06

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 10.40...10.50
 Del.quantity cm³/ : 13.3...13.5
 100 s: (13.0...13.8)
 Spread cm³ : 0.5
 100 s: (0.8)

2nd speed rpm : 225.0
 Rack travel in mm : 4.7...5.3
 Del.quantity cm³/ : 2.2...2.6
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 0.50...0.90
 2nd speed rpm : 350
 travel mm : 2.00...2.60
 3rd speed rpm : 650
 travel mm : 4.90...5.50
 4th speed rpm : 1145
 travel mm : 8.30...8.50
 5th speed rpm : 1250
 travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1120
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 133.0...135.0
 1000 : (130.0...138.0)
 Spread cm³ : 5.00
 1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 561..64

Testing:

1st rack travel in: 9.40

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1235...1265

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 4...12

Testing:

Speed rpm : 100

Minimum rack travel: 6.20

Speed rpm : 225

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 300...360

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del. quantity cm³/ : 145.0...153.0

1000 s: (143.0...155.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 330.0...380.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225

Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-12

Start of delivery - engine: 13° before TDC

Firing sequence of engine:

1-5-3-6-2-4.